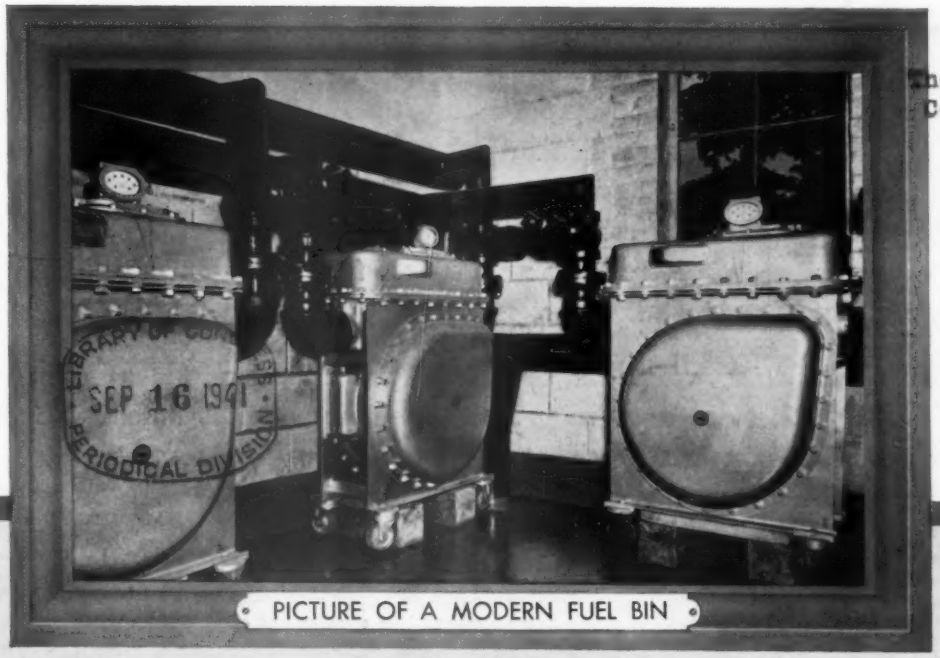
AMERICAN GAS JOURNAL

SEPTEMBER 1941

COPYRIGHT DEPOSIT

The Library of Congress
Central Serial Record
Received
SEP 17 1941
Copy 1



PICTURE OF A MODERN FUEL BIN

EMCO LARGE CAPACITY PRESSED STEEL METERS

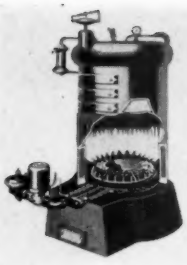
EMCO No. 4½ Pressed Steel Meter

OF industry's three most widely used types of fuel, gas, coal and oil, gas alone offers unique savings in addition to its inherent operating advantages and efficiencies. In the case of storage, no valuable space is occupied, there are no annoying fire hazard requirements and no increased insurance premiums. In handling, gas is available at the turn of a valve. No expensive stoking or firing equipment, heating equipment or mixing valves are required. Also, the investment in stored fuel is eliminated, working capital is not tied up and payments are made after use, based on definite accounting periods.

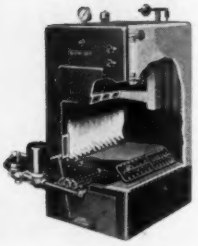
This simple easy system of fuel supply is dependent upon metering equipment developed for this service itself. EMCO Pressed Steel Meters, developed specifically for industrial services, provide the necessary accuracy, ruggedness and simplicity. They have progressed hand in hand with the growth of industrial gas consumption.

EMCO No. 5 Pressed Steel Meter

PITTSBURGH EQUITABLE METER COMPANY
MERCO NORDSTROM VALVE COMPANY
Main Offices, Pittsburgh, Pa.
BUFFALO NEW YORK BROOKLYN TULSA CHICAGO PHILADELPHIA LOS ANGELES SAN FRANCISCO MEMPHIS DES MOINES KANSAS CITY SEATTLE HOUSTON COLUMBIA



Conversion Burners



Star performance at the heart of the gas appliance—The BURNER!

Only BARBER Conversion Burners

Have This Combustion Principle . . .

No matter how much any conversion burner may be dolled up, or built up with elaborate elements for "retaining" or "concentrating" heat—remember that the combustion principle itself is the fundamental factor in efficiency. The famous patented Barber Jets, available in no other burner, with their auxiliary air feed, produce a 1900° flame temperature on atmospheric pressure. The resulting high efficiency combustion, and perfect control and concentration of heat, are responsible for Barber's record of economy, in many thousands of installations.

For air conditioning, warm air, or steam, Barber is the *one* conversion burner that assures perfect combustion on natural, manufactured, Butane-Propane or bottled gas. For conversion jobs that stay sold, for less servicing and more customer good-will, equip *your* conversion jobs with Barber Burners.

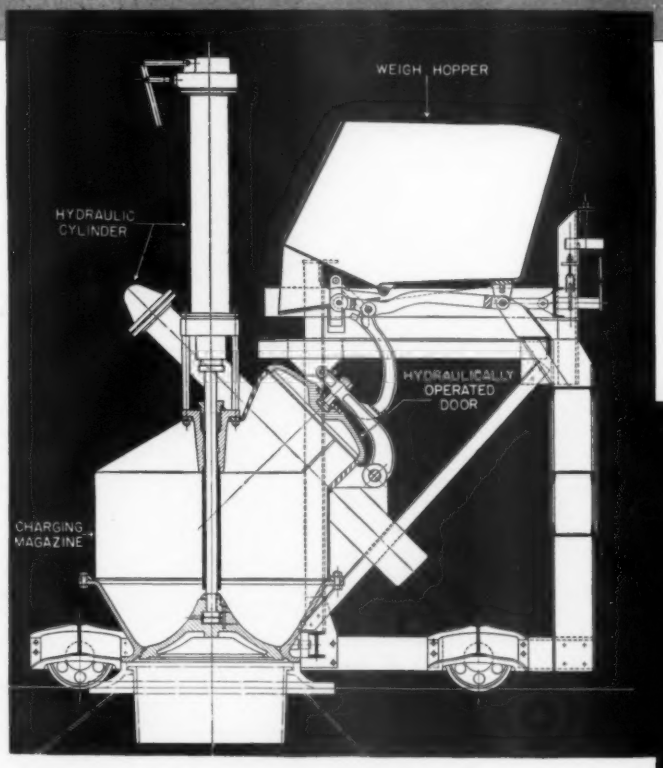
Barber Conversion Burners, offered with a wide choice of control equipment, have brought all essential advantages of automatic gas heat to thousands of owners of "solid fuel" furnaces and boilers. Made in a complete range of types and sizes for both round or oblong furnaces and boilers—all models easily and properly adjustable to grate sizes. Listed in A. G. A. Directory of Approved Appliances. Write for Catalog and Prices on Conversion Burners, Appliance Burners and Regulators.

THE BARBER GAS BURNER COMPANY, 3704 Superior Avenue, Cleveland, Ohio

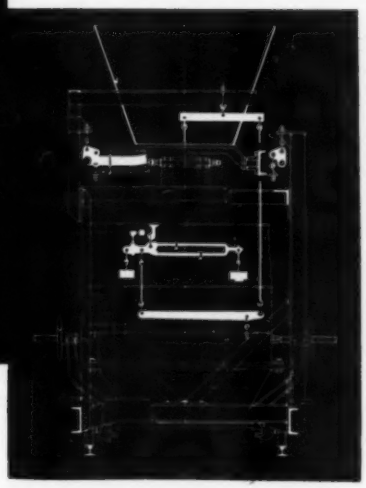
Address Michigan Inquiries to The Barber Gas Burner Co. of Michigan, 4475 Cass Ave., Detroit

BARBER *Automatic* JET GAS BURNERS

SEMET-SOLVAY *Automatic* CHARGING MACHINE



INCREASES CAPACITY *Saves Labor*



At least ten per cent increase in capacity of your water gas machine can be obtained by the addition of a Semet-Solvay Automatic Charging Machine. Part of the increase is obtained by eliminating shut-downs for charging, part from the added efficiency of a fuel bed of constant depth.

The charger refuels the generator once every cycle during the back-run period. Fuel is accurately weighed by a built-in scale and is uniformly distributed by a hydraulically-controlled spreader. A clamping device gives a gas-tight closure between charger and generator. Seating of the doors is cushioned by the hydraulic cylinders.

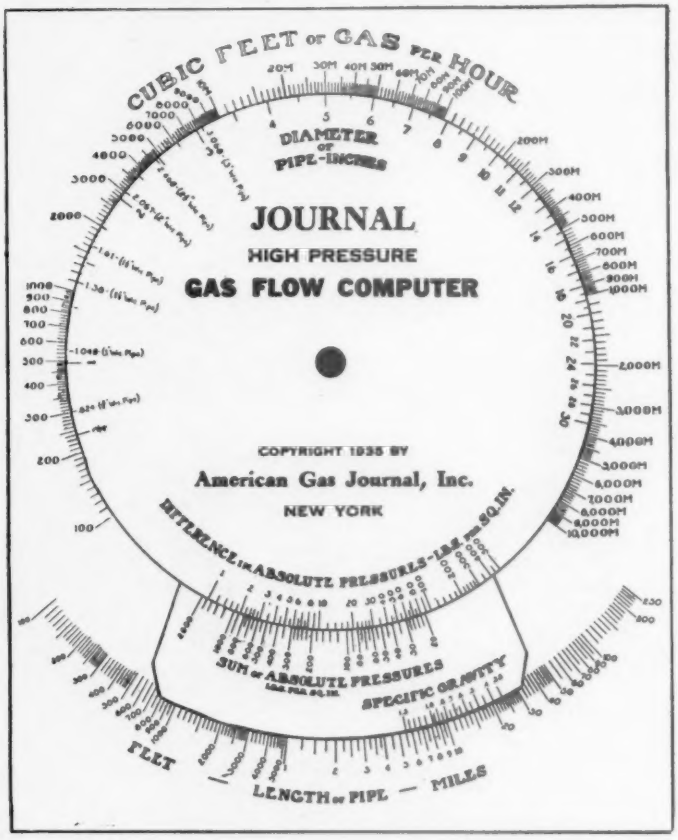
The Semet-Solvay Automatic Charging Machine is built for use with any make of water gas or blue gas machine. Automatic charging is not recommended however when the fuel used is bituminous coal. If you operate on coke or anthracite coal, why not write us for further information and a list of satisfied users.

SEMET-SOLVAY ENGINEERING CORPORATION

40 Rector Street New York, N. Y.

AMERICAN GAS JOURNAL, September, 1941. Vol. 155, No. 3. Published monthly by American Gas Journal, Inc., at 34 North Crystal St., East Stroudsburg, Pa. Executive and Editorial offices at 53 Park Place, New York, N. Y. Entered as second-class matter, October 7, 1928, at the post-office at East Stroudsburg, Pa., under the Act of March 3, 1879. Printed in U. S. A.

"Journal" Gas Flow Computers



New Improved Gas Flow Computers now available of durable celluloid, encased in a convenient leatherette cover with complete instructions.

Actual Size 6¼ x 7½

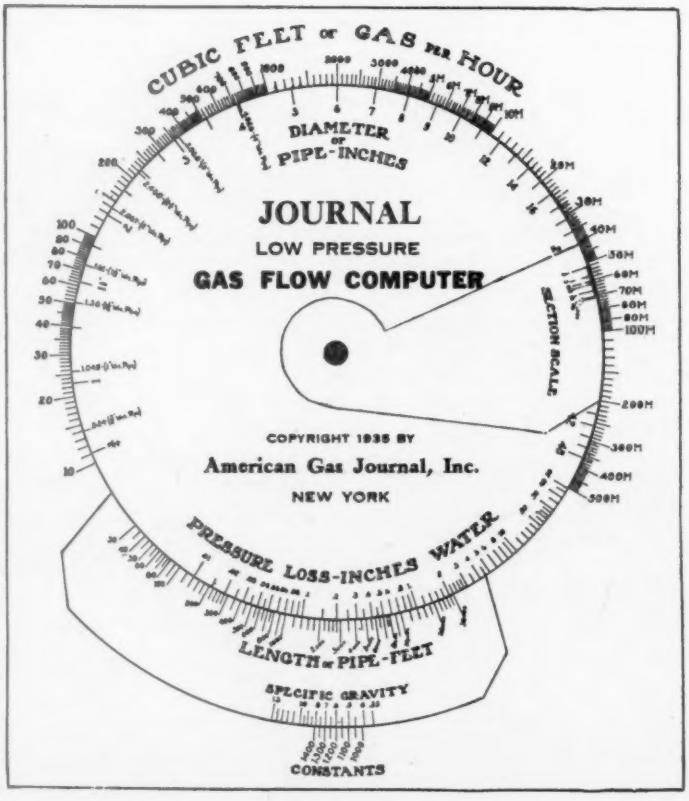
High Pressure Computer Range:

Cu. Ft. of Gas Per Hour—100-10,000 M
Diameter of Pipe Inches ¾-30
Difference in Absolute Pressure—Lbs. per sq. in. 1-500
Sum of Absolute Pressures—Lbs. per sq. in 2000-20
Specific Gravity 1.5-.35
Length of Pipe—Feet 100-5000
Length of Pipe—Miles 1-250

Low Pressure Computer Range:

Cu. Ft. of Gas Per Hour—10 to 500 M
Pipe Diameter ¾" to 48" (including standard and actual weight up to 4")
Pressure Loss Inches .01-10.
Length of Pipe—Feet 30-30,000
Specific Gravity 1.5-.35
Constants 1400-1000

Price $3.50 Each, Postage Prepaid



AMERICAN GAS JOURNAL
53 Park Place, New York

Please enter our order for Computers as follows at $3.50 each, postage prepaid

....HIGH Pressure Computer

....LOW Pressure Computer

NAME .....

ADDRESS .....

From Well to House Meter, There's A
"CLEVELAND" Machine
Exactly Fitted to Every Pipe Laying Operation

Some of the reasons why "CLEVELANDS" are "tops" in value are: generous-sized, field-equipped Diesel or Gasoline engines—harder, stronger materials—multi-speed transmissions for individual correct control of all speeds and feeds—weight well-balanced on quick-maneuverable full-crawler mounting—quick, easy field-servicing due to simple accessible construction—and rapid, cheap transportation.

←THE CLEVELAND MODEL "140" PIPELINE DITCHER

"A Thoroughbred in Every Respect"

The "Model 140" is a balanced combination of all the features which have been found most desirable in cross country ditching such as:—large, dependable crawlers and wide digging range. Has extra strong boom and buckets—digs all types of soil successfully—operates over the roughest terrain—special equipment for stripping pipelines. Digs 16" to 30" wide and up to 5½ foot deep at speeds from ½ foot to 26 feet per minute.

The CLEVELAND MODEL "75"
for House Service Trench

Here's a still smaller, lighter and inexpensive machine for digging small diameter lines, house services, etc.

Small companies with limited programs—as well as larger companies who use it to supplement their larger trenchers, have found the "MODEL 75" ideal. Weighs only 7,000 lbs.—is but 45" wide. Digs 8" to 12" wide and up to 3½ foot deep.

It is the last word in portability.

The CLEVELAND Model "95"

The famous "BABY DIGGER"

The Pioneer small trencher—known and used almost universally throughout the gas industry. Small in size—but big in performance—light in weight—tough and dependable—compact and portable—yet extremely fast.

Digs 12" to 24" wide, up to 5½ foot deep.

The "MODEL 95" is the ideal trencher for general gas distribution digging.

Let Us Send You Details On These MONEY-SAVERS

THE CLEVELAND TRENCHER CO.
"Pioneer of the Small Trencher"
20100 ST. CLAIR AVENUE • CLEVELAND, OHIO

The UNIVERSAL Story of CONTROLLED PERFORMANCE

A Sound Sales Story that Continues Selling After the Purchase is Made...

● The unusual market conditions which exist in the appliance industry today make it more essential than ever before that increasing emphasis be placed upon sales tactics which will act as insurance against decreased business once this so-called seller's market has disappeared. Range sales must be built upon a sound basis—a basis of *fact,* not *theory.* The sales story must be presented in light of continuous fundamental needs and that story is founded upon PERFORMANCE.

The Universal Story of Controlled Performance is a sound sales story which interprets the advantages of the modern Universal Gas Range in terms of basic needs and in light of the Homemaker's interest. For top-burner cooking, oven cooking and broiling, the various Universal advanced devices offer something entirely new in an automatic controlled cooking service —a carefree cooking service which presents gas as the ideal cooking fuel and renders a performance so outstanding that it assures extra dividends in customer satisfaction.

☆ ☆

CRIBBEN & SEXTON COMPANY

Manufacturers of Universal Gas Ranges

700 N. SACRAMENTO BOULEVARD

CHICAGO · · · · ILLINOIS

VOLUME 155
NUMBER 3

AMERICAN GAS JOURNAL

ESTABLISHED 1859

WHOLE
NUMBER 3813

SEPTEMBER, 1941

PUBLISHED MONTHLY BY
AMERICAN GAS JOURNAL, Inc.
53 Park Place, New York

S. G. KRAKE, *President and Treasurer*
M. E. KELLEHER, *Secretary*
A. I. PHILLIPS, *Editorial Director*
H. T. MATTHEW, *Business Manager*
JAMES C. MUNN, *Midwest Representative*
10515 Wilbur Ave., Cleveland, Ohio
Tel. Garfield 1055
THOMAS MORGAN, *Western Representative*
168 N. Michigan Ave.
Chicago, Ill.

Copyright 1941, American Gas Journal, Inc.

Subscription $2.00 per year U.S.A.; $3.00 Canada; $4.00 Foreign. Single copies, 25 cts.

CONTENTS

The Role of the Gas Industry in National Defense—T. S. Strickler 9

The Oil Situation as it Affects the Gas Industry 11

New Pipe Lines Projected to Relieve Tanker Shortage 14

Problems Arising from Abnormal Demands for Gas Service .. 15

Federal Installment Selling Regulation 16

Gas Burning Equipment as a Fixture 21

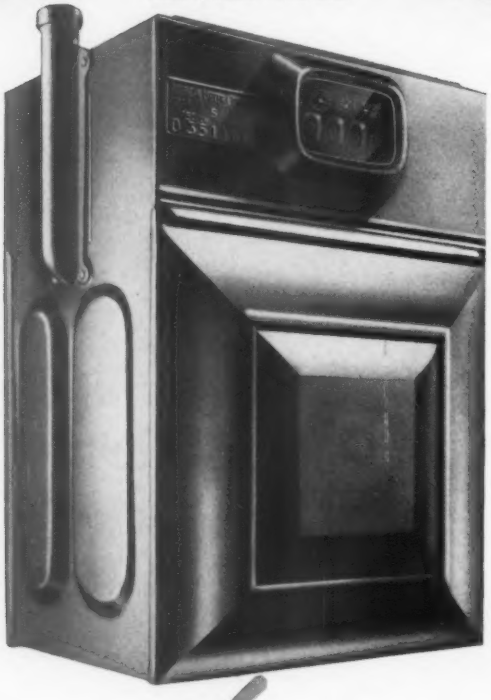
Forecasting Winter-Day Load in a Natural Gas Territory—Part 1—P. E. Beckman, J. J. Pugh and G. E. Arnedt 23

Shop Methods for Improving Gasoline Economy—Errol J. Gay 35

News of the Gas Industry 40

Photos by Robert Yarnall Richie

For everyone in 'forty-one it's



...born of research

All operations under rigid laboratory control! But the phrase, despite its significance, only vaguely hints of the intensive, unremitting labors of collective research, analytic and plant-control laboratories... of collaborating gas company meter shops and field engineers conducting trials and tests . . . of technicians fitting the results of approved "pilot" tests into production routine ◊ And all to the end that American Meter Company products, including Tinned Steelcase Meters, shall maintain their reputation for steady progress in increased values! Practical and better meters . . . more accurate, more trouble-free. Greater and greater return upon your meter-dollar investment. ◊ The details are found in CATALOG TG-4. If your copy has been borrowed, we shall promptly forward another.

GENERAL OFFICES • 60 EAST 42ND STREET, NEW YORK, N. Y.

AMERICAN METER COMPANY

INCORPORATED (ESTABLISHED 1836)

1654

TINNED STEELCASE METERS

SEP 13 1941

SEPTEMBER
1941

AMERICAN
GAS JOURNAL

VOLUME 155
No. 3

The Role of the Gas Industry in National Defense

By
T. J. Strickler
President, American Gas Association

Sudvarg Studio

T. J. Strickler.

THE SUBJECT of national defense has been uppermost in the discussions and studies of numerous members and committees which comprise the working forces of the American Gas Association. As a matter of fact, the American Gas Association set up its Committee on National Defense before the war began in Europe. For two years prior to the conflict, Association Headquarters had assembled material that would prove helpful at some future date in view of the irresistible progress toward war. When war actually became a reality the Association already was well prepared to serve its membership, having collected in advance of hostilities much valuable information from sources abroad as well as in this country.

Some thirteen months ago — on May 29, 1940, to be exact, the Association's Executive Board through its then President, Mr. Walter C. Beckjord offered the services and facilities of the gas industry to the Advisory Commission of the Council of National Defense, the Departments of War, Navy and Interior. Appreciative acknowledgments were received from Chairman Edward R. Stettinius, Jr., of the Advisory Commission, who stated that "the gas industry will in due time be advised of the assistance which it may be called upon to render"; from Assistant Secretary of War Louis Johnson; Rear Admiral Robert L. Ghormley, Acting Chief of Naval Operations; and Harold L. Ickes, Secretary of the Interior. This was the Association's first official act in volunteering its help in the national defense effort. On January 22, 1941, I, as President of the American Gas Association, renewed this offer and it was gratefully acknowledged by Mr. William F. Knudsen.

When preparations for national defense were well advanced it was my pleasure on June 2nd of this year to address a letter to the President of the United States stating that the American Gas Association, representing the natural gas and manufactured gas industry of the United States, welcomes the opportunity to pledge its full support to the Government in the national defense emergency. This letter was subsequently acknowledged by F. H. LaGuardia, United States Director of Civilian Defense, and by Leland Olds, Chairman of the Federal Power Commission.

I mention these communications to establish the fact that the gas industry has placed itself on record in Washington as desiring to be helpful in all ways concerned with the defense situation.

In due course the Secretary of War appointed the National Technological Civil Protection Committee on which the American Gas Association is represented. This Committee has issued some valuable material on plant protection which has been distributed by the Association in pamphlet form. Additional pamphlets are in course of preparation. Their contents are based on information secured by the Committee from abroad.

The Association's Committee on National Defense has collected and

digested a large amount of source material, much of it coming from places in Europe that have experienced war. In obtaining authentic information from overseas, assistance from the Institute of Gas Engineers, Great Britain, has been sought and the aid of diplomatic channels has been invoked. The British gas trade papers have come through irregularly, but Association files are complete. Until the collapse of their countries, the French and Belgian trade papers continued to arrive. It appears that the only material now received from Switzerland is of a promotional type after the censor is satisfied there is no technical data. German gas papers arrive at long intervals, perhaps a half dozen copies together. These have been translated and are available for our use. Needless to say, all of the foreign trade press has to be extremely guarded in these days. By anticipating the coming of war and by starting early to collect authentic data, we have built up a large and valuable file on the current war. It has been our thought all along that the Association should function as a clearing house in the collection of factual information to be incorporated in reports for issuance to the gas industry for its guidance and not necessarily as recommended procedures to be adopted.

One of the first tasks completed by the Association's Committee on National Defense was the survey of the toluol facilities of the gas industry. This report was accepted by the Association and delivered to the United States Army Ordnance Department.

The Association's Technical Section has been highly useful to the Committee on National Defense. In March, the Association issued a questionnaire to all member companies asking a series of questions about steps now being taken in the United States and Canada in the line of protection of plants and employees. Most of our companies replied promptly, and we are especially grateful to our friends in Canada for the help that they gave. In view of the nature of some of the questions, there was naturally some hesitation about answering them, but companies were reassured by our statement that the replies to the questionnaire would be destroyed after summarization by the industry as a whole so that no information as to protection could possibly get into inimical hands.

As was anticipated, one of the most important results of the questionnaire was its suggestive value. A number of company executives stated that the questions suggested to them protection measures of which they had not thought, and some of which they have now put into effect. A competent committee of the Association's Technical Section assisted in summarizing the replies which were recently reported at the Association's Executive Conference.

On June 19 of this year it was my privilege to submit to Ralph K. Davies, Deputy Petroleum Coordinator for National Defense, a statement on fuel oil requirements of the manufactured gas industry.* I took occasion in this statement to emphasize the fact that water gas production and distribution, mainly confined to the Atlantic Seaboard States and the Pacific Northwest, is dependent upon fuel oil. I stressed the point that there is no possible substitute for fuel oil and any statement to the contrary is in error. Our relations with the various departments of the Government handling national defense developments are friendly and cordial and, I believe, officials of these departments have a high regard for the efficient manner in which we are conducting our own business in the light of emergency conditions.

Of all the measures that have issued from Washington of a national defense nature, none are more important than those having to do with priorities. In this regard, our appliance manufacturers are to be complimented on their ingenuity and resourcefulness in adopting substitute materials for those they have difficulty in securing under the priority system. These are vexatious days for the manufacturers and they are due great credit for meeting the many special conditions imposed on them and at the same time be in a position to make deliveries.

By reason of the national defense program, operations of the Association's Testing Laboratories will very likely have to be changed to conform to actual conditions as they arise. Since it is probable that there will have to be more or less constant changes in substitute materials, it would seem that the Laboratories will have plenty to do in the near future in adapting requirements for the use of these substitutes and for the specifications produced by defense agencies in Washington.

The Association recently increased the personnel of its Washington office for the purpose of dealing more adequately and efficiently with growing and pressing needs of gas companies for materials and equipment through priority orders. The Priorities Division of the Office of Production Management is handling thousands of applications for priorities from every industry and is doing everything possible to expedite consideration of these applications, but it must be appreciated that applications mailed in must be considered in their regular course. It is evident from experience that applications filed personally with the official in charge of the particular section involved take precedence over applications sent in by mail. It is therefore suggested that all applications for priorities be sent to the Association's Washington office where they will be filed with the proper officials and followed up. There is always one right way of filing an application for priorities and it would be well, if possible, to consult the Washington office first, advising it fully and be guided by suggestions as to the preparation of the application.

As the war continues its impact, all operations of the gas industry are sure to be affected. Right now we are living from day to day more or less in accordance with Government edict and this is certain to be the trend in the future so far as we can see it. The gas industry is fortunate in being a united industry and in having a national Association so competently equipped to represent it in matters of national import. The national emergency has not caught our industry or our Association napping. We were enlightened and wise enough to see war coming, and no time has been lost nor have we neglected to take any necessary steps to prepare ourselves against eventualities. Various departments of the Association, its Washington office and the Laboratories are fully equipped to do an outstanding job during these uncertain times. We are a fortunate industry to be able to say that.

* See article American Gas Journal, July 1941, p. 32.

The Oil Situation As It Affects The Gas Industry

by
The Editor

THE THREATENED shortage of oil in the states along the Atlantic seaboard from Maine to Florida has been causing grave concern to all users of petroleum products, including those operating carburetted water gas plants. Actual curtailment of gasoline deliveries has tended to emphasize the seriousness of the situation.

The Cause

The present situation is a direct outgrowth of the war. It comes about through lack of transportation facilities, and not through inadequate production capacity.

With the outbreak of the war, German and Italian tankers ceased to transport oil in the Western Hemisphere. British and other European tankers went elsewhere; some were converted to military use; their movements were slowed by the necessity of convoys, and some were sunk. A heavy load was thus thrown on the American tanker fleet even before any transfers were made to Great Britain.

It should be appreciated that about 96 per cent of the oil transported from the Gulf States to the Atlantic Coast comes by tanker, and that the demand for petroleum products has been increasing rapidly.

The transfer of 50 tankers to the British in May reduced the fleet by almost one-fifth. Another 30 have since been taken, and there is prospect that perhaps 70 more may be required. Then the Navy has taken over 12 large, high speed tankers built by the Standard Oil Company of New Jersey; and 4 on the west coast are said to have been diverted to Russian service.

What the Petroleum Industry is Doing

The petroleum industry has been doing a splendid job in its efforts to meet this difficult situation without causing undue inconvenience to the public, and at the same time supply essential uses.

The American Petroleum Institute has the following to say:

"Service station curfews and gasoline rationing have been getting the publicity as the diversion of American tankships to British service imposes temporary shortage of certain petroleum products on the Atlantic Seaboard, but behind the scenes the American petroleum industry has been busy strengthening and extending the arteries of defense for mechanized warfare. Within a few months the United States will have a petroleum service unequalled in the world, although the expansion will cost the industry more than $300,000,000 this year alone.

"Money and work are going into the job, and in many different ways. Enactment of the Cole Bill by Congress was the signal to start preliminary work on what will be the world's largest pipe line project. It will cost $70,000,000 and will transport from East Texas via St. Louis to Philadelphia and New York petroleum refineries the equivalent of the crude oil cargoes of 65 tankships. Part of the 1,500-mile line will be 24 inches in diameter, the largest ever built.

"Work has already begun on the Plantation pipe line, a 1,260-mile artery stretching from Baton Rouge, La., to Greensboro, N. C., through an area dotted with industrial plants and army posts. The line, scheduled for completion before snow flies, should release 10 tankships.

"The Southeastern pipe line, a 450-mile refined-products conduit virtually completed in 1940 but with final connections delayed by railroad opposition, should go into operation shortly. The line will serve to relieve at least two tankships and expedite deliveries to large areas along its route from Florida through Georgia to Tennessee.

"Operations are scheduled to begin December 1 on an international line reaching 236 miles from Portland, Me., to Montreal, Quebec, and designed to eliminate a 10-day tankship trip in the delivery of crude oil to Canadian refineries.

"Under construction and on order are 145 new and additional oil tankships, plus 11 which have been completed this year. At least 16 more are scheduled to go into service before 1942. Others will be completed as rapidly as priorities permit. In addition, consideration is being given to establishing a new shipyard especially adapted for tankship construction, and also to the construction of tankships of a new type which may be towed by other vessels.

"Several companies have rearranged tankship routes and have released their tankships for service of supply on the Atlantic Coast. All tankships are carrying larger cargoes under enabling legislation passed by Congress. New barges of conventional types are being built in large numbers for use on inland waterways.

"Railroad shipments of crude oil and petroleum products have been increased and deliveries expedited, especially in the Atlantic Seaboard area."

The Outlook for the Gas Industry

For some time past the American Gas Association has maintained active contact with the office of The Petroleum Coordinator for National Defense.

On June 19th, Major T. J. Strickler, President of the A.G.A. presented a comprehensive "Statement on the Oil Requirements of the Manufactured Gas Industry." (See American Gas Journal, July 1941, page 32).

Thereafter the Petroleum Coordinator requested a list of gas companies operating in the eastern seaboard states together with an estimate of the quantity of each grade of oil each would require during each month of the period July 1, 1941, to June 30, 1942. The A.G.A. is now collecting this information, which will necessarily take some time to compile.

Meanwhile preliminary estimates of oil requirements for the above area and period by grades of oil, by months and by states and also actual 1940 figures were prepared and presented on August 25th to Dr. John W. Frey, Director of the Petroleum Marketing Committee.

On that occasion Dr. Frey ex-

Gas Made and Purchased and Oil Used by Manufactured

GAS M C F

	GAS PRODUCED				
	Carb Water Gas	*Retort Coal*	*Coke Oven*	*Butane, etc.*	*Total*
New England					
Maine	1,155,000	139,600		14,000	1,308,600
New Hampshire	957,700	85,100			1,042,800
Vermont	426,000	29,700			455,700
Massachusetts	11,082,200	4,894,600	716,600	138,400	16,831,800
Rhode Island	644,700	1,075,600	3,445,600		5,165,900
Connecticut	5,671,000	410,200	217,800		6,299,000
Total New England	19,936,600	6,634,800	4,380,000	152,400	31,103,800
Middle Atlantic					
New York	61,816,500	1,096,800	27,346,200	96,200	90,355,700
New Jersey	23,038,000	129,600	4,545,400	55,100	27,768,100
Pennsylvania	17,580,600	1,167,200		6,045,000*	24,792,800
Delaware	60,800				60,800
Maryland	6,190,000	21,000		28,800	6,239,800
District of Columbia	10,647,100				10,647,100
Total Middle Atlantic	119,333,000	2,414,600	31,891,600	6,225,100	159,864,300
South Atlantic					
West Virginia	54,700	72,700			127,400
Virginia	4,314,100	283,900		49,500	4,647,500
North Carolina	986,500	1,282,100		21,000	2,289,600
South Carolina	798,800	444,500		37,400	1,280,700
Georgia	960,100	151,100		94,100	1,205,300
Florida	4,122,500			47,300	4,169,800
Total South Atlantic.	11,236,700	2,234,300		249,300	13,720,300
Total	150,506,300	11,283,700	36,271,600	6,626,800	204,688,400

**6,045,000 M C F of reformed oil refinery gas.*

pressed the opinion that essential industries, like the gas industry could and would be fully supplied. He urged that

(1) Gas companies carefully avoid any panic or anything which might lead the public to become panicky.

(2) Gas companies continue to operate as heretofore, using the same general grades of oil. (Any saving in oil through the substitution of solid fuel or tar as boiler fuel would of course be desirable when reasonably possible.)

It should be noted that no priorities on oil have been established nor has the householder with the oil conversion burner been asked to go back to coal.

Recommendations

The American Gas Association is recommending that

(1) Each company receiving oil by rail consult the railroad company to make sure that no serious local delays due to congestion are to be expected during the coming winter. It is assumed of course that gas companies are maintaining close contact with the supplying oil companies.

(2) If you have or are threatened with difficulty in securing oil deliveries, notify A.G.A. Headquarters. Our representatives are in direct contact with the proper authorities, and feel we can get prompt and effective consideration and action.

Attitude of Competitors

The oil burner industry is quite naturally apprehensive lest it be seriously harmed by fear on the part of the public that oil may be difficult to secure next winter.

While many oil burner users might be tempted to turn to gas in the present emergency, at least temporarily, the gas industry might thereby become subject to attack on the ground that it was using its preferred position to gain a load from a less fortunate competitor who also depends on oil.

Much of the load so gained would probably be temporary. The questionable desirability of such loads is covered elsewhere in this issue under the title: "Problems Arising from Abnormal Demands for Gas Service Resulting from National Emergency."

Gas companies will, of course, continue the sale of permanent gas house heating installations as well as other domestic, commercial and industrial equipment; but they may be expected to avoid advertising or sales promotion which might give just cause for the claim that they were using the present situation to their advantage and to the detriment of a competitor.

The gas industry has fought hard and intelligently for business, but it has never tried to take advantage of a competitor when he has been in a tight place. For example, after the 1938 hurricane the New England Gas Industry carefully refrained from capitalizing on its marvelous record of service to the disadvantage of its less fortunate competitors, the electric companies.

Among officials of the government,

Gas Companies in the Eastern Seaboard States During 1940.

GAS PURCHASED				OIL USED—THOUSANDS OF GALLONS					
Coke Oven	*Other*	*Total*	*Total Gas Produced and Purchased*	*Water Gas Light*	*Water Gas Heavy*	*Water Gas Total*	*Coal Gas Retorts*	*Boiler Fuel*	*Total*
			1,308,600	428	4,509	4,937		756	5,693
			1,042,800	2,685		2,685			2,685
			455,700	1,154		1,154			1,154
13,332,100		13,332,100	30,163,900	9,384	36,419	45,803	43	833	46,679
			5,165,900	1,014	775	1,789		318	2,107
6,502,300		6,502,300	12,801,300	7,564	10,680	18,244		1,063	19,307
19,834,400		19,834,400	50,938,200	22,229	52,383	74,612	43	2,970	77,625
8,586,100	5,361,400	13,947,500	104,303,200	36,486	198,727	235,213		4,155	239,368
8,620,300	4,200	8,624,500	36,392,600	11,986	79,482	91,468		185	91,653
12,393,500	1,015,800	13,409,300	38,202,100	9,772	57,357	67,129	6	5,625	72,760
			60,800	149		149			149
6,061,000	1,838,200	7,899,200	14,139,000	865	23,784	24,649		33	24,682
	3,994,400	3,994,400	14,641,500	1,051	7,400	8,451		6,130	14,581
35,660,900	12,214,000	47,874,900	207,739,200	60,309	366,750	427,059	6	16,128	443,193
			127,400	116		116			116
			4,647,500	8,816	3,935	12,751			12,751
			2,289,600	2,870		2,870	14		2,884
			1,280,700	1,142	1,701	2,843			2,843
			1,205,300	113	4,370	4,483	34	457	4,974
			4,169,800	990	16,229	17,219		3,667	20,886
			13,720,300	14,047	26,235	40,282	48	4,124	44,454
55,495,300	12,214,000	67,709,300	272,397,700	96,585	445,368	541,953	97	23,222	565,272

national defense is the first consideration. The essential part of the gas industry in supplying and in being prepared to supply defense industries is well recognized. It is unlikely that the gas companies on the eastern seaboard in this emergency will go counter to the traditions of the industry, seek to obtain a load of questionable desirability and jeopardize their high position in the ranks of essential industry.

Essentiality of Oil Supply to Gas Companies

Various suggestions have been made by uninformed persons that the gas industry should use less oil or should make more gas from coal.

In discussing these suggestions, the following points may be helpful:

(1) Coal gas and carburetted water gas are made by entirely different processes. While small quantities of oil are sometimes used in coal gas retorts, for all practical purposes the use of oil may be considered to be confined to water gas manufacture and boiler fuel. Many companies have already curtailed this latter use, and others will do so if requested; to the full extent practicable, but the use of oil for water gas production cannot be curtailed. Oil is an essential raw material of carburetted water gas manufacture; and there is no generally available substitute for it.

(2) Coal gas and coke oven plants are generally operated at full, or nearly full, capacity. Any excess requirement is furnished by the water gas sets. Coal and coke oven gas production cannot be materially increased without new equipment.

(3) It would be impractical to add coal or coke oven gas equipment under present conditions. Construction materials could not be secured; and even if they could be, the oil shortage is expected to be over before the installations could be completed.

(4) The oil used per M for water gas manufacture could not be reduced substantially without impairing the service, particularly to industrial customers. To give good service (a) the heating value of the gas per cubic foot, (b) the specific gravity of the gas, and (c) the rate of flame propagation must remain substantially constant. In other words, the composition of the gas, and hence the oil used per M, must remain relatively constant.

(5) Defense industries are responsible for by far the major part of the increase in gas sales now being experienced.

Statistics

The consumption of petroleum products in the Atlantic Coast area during 1940 was as follows:

Product	*Thousands of Gallons*
Motor Fuel	8,360,400
Heavy Fuel Oil	6,164,900
Light Fuel Oil	3,468,600
Kerosene	1,591,700
Lubricating Oil, etc.	1,663,100
Total	21,248,700

The quantities of gas made and purchased and oil used in each state in this area during 1940 are shown in the accompanying tables.

New Pipe Lines Projected to Relieve Tanker Shortage

The accompanying map indicates proposals under consideration for crude and refined products pipe lines for relieving the threatened shortage of oil products on the eastern seaboard caused by the diversion of American tankers to the British shuttle service from Caribbean to north Atlantic ports. It also shows other lines being constructed in the interior and the line from Portland, Me. to Montreal, Canada.

Approximately 1,250,000 barrels of oil (crude and refined products) are moved daily to New York, normally, by tankers from the gulf coast to the Atlantic seaboard. This is 95% of the consumption in the eastern area. Present pipe line facilities account for about 50,000 barrels a day into the New York area, while railroads, through tank cars, handle an inconsequential amount since transportation costs by this method are prohibitive.

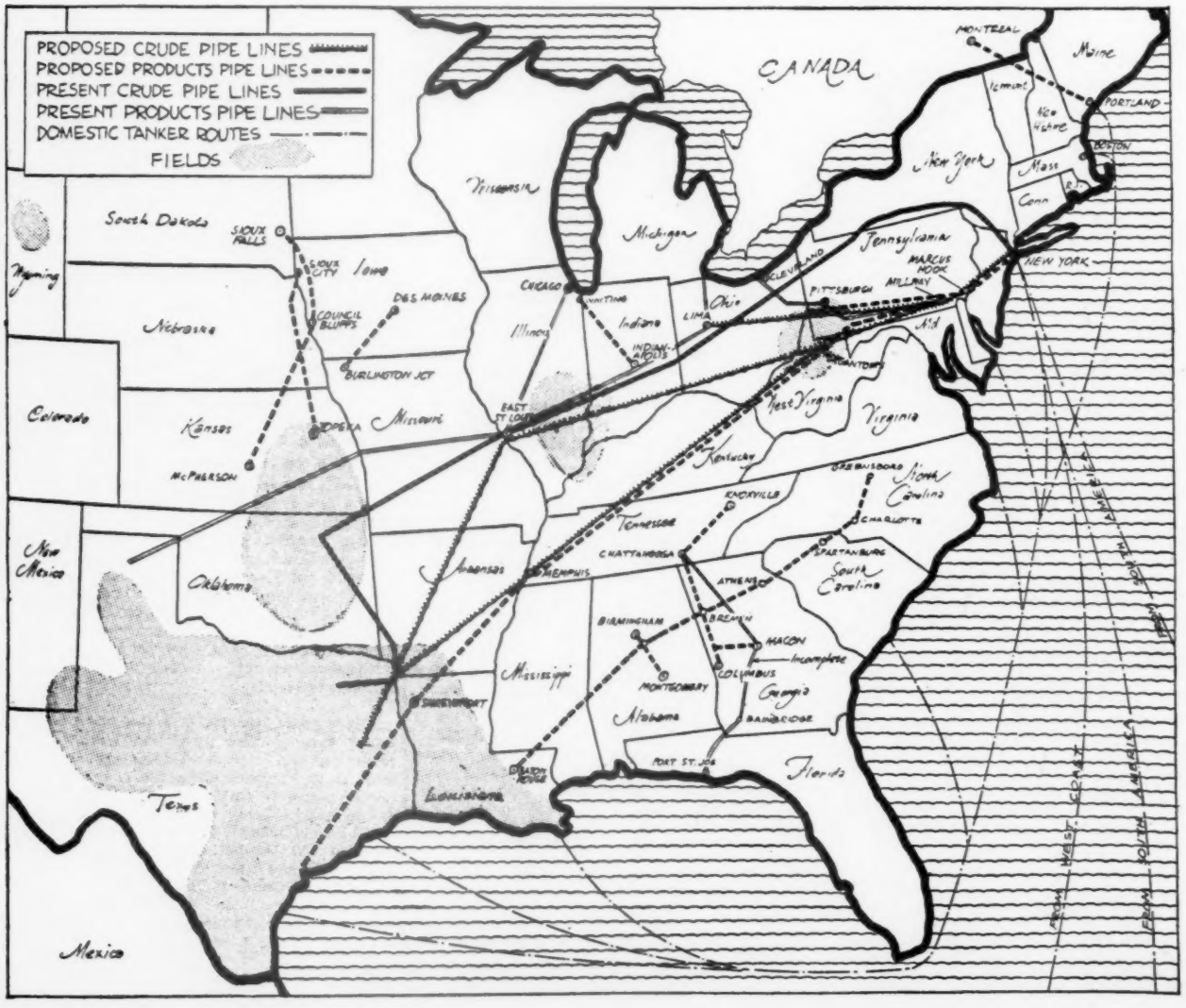
The map also indicates, in a general way, the present pipe facilities by a wide black line. This, it should be explained, represents, in sections, sometimes two, three, or four different companies. Moreover, it embodies only the principal pipe lines and does not portray the small connecting lines, or loops to other centers of production. To show all the lines in Texas, for example, would require a maze of lines which would be difficult to follow in this compact presentation.

Tanker routes are roughly indicated, showing the movement from the gulf and west coasts, the latter through the Panama Canal (which is small), as well as the movement from American companies operating in South America, principally Venezuela have been substantially higher than in 1940.

Pipe Line News

Colonel Rockwell Active in National Defense

At a meeting of the Automotive Parts Manufacturers Association in Washington, D. C., on Tuesday, July 22nd, Mr. James Adams of the O.P.M. appointed Colonel W. F. Rockwell as Chairman of the Nominating Committee to select representatives to consult with the O.P.M. on the transfer of automotive activities to National Defense. Colonel Rockwell is Board Chairman of Timken-Detroit Axle Company as well as President of Pittsburgh Equitable Meter Company.



Problems Arising from Abnormal Demands for Gas Service Resulting from National Emergency

A. G. A. Rate Committee

DURING the present emergency many gas companies may be threatened with serious production, transmission, distribution or economic problems due to one or more of the following conditions:

(1) Greatly increased demands of both defense and non-defense industries for industrial gas. In many cases such plants are located at the ends of distribution mains.

(2) Shifting of population to industrial centers. This coincides with the construction of defense and non-defense housing developments.

(3) Requests for temporary or stand-by service to replace oil during the period of the threatened shortage. Thus far most of these requests have been for house or building heating or for boiler fuel in domestic, commercial or industrial establishments. The potential demand of individual establishments is, in some cases, very large.

The first two of these classes of service may or may not be of a temporary nature; the third will in most cases be definitely temporary and is likely to be noncompensatory unless there are adequate safeguards.

We consider it to be the duty of the gas industry and of the regulatory bodies to safeguard the quality and cost of service to existing customers, and, in the present emergency, to use every effort to see that the necessary demands of defense industries and their employees be fully met. However, gas companies are public utilities and as such have obligations to serve, which obligations must be met except as provided to the contrary by non-discriminatory rules established either by public service commission approval or by case precedent.

In the past, few gas companies have had need for rules of this nature; and as a result, few have them. Few have rates designed for temporary or standby service. In many situations such protection for both company and existing customers is now important, particularly in view of the requests for temporary or stand-by service from those now using oil. No two situations are alike, but it is strongly recommended that each company promptly review its rate schedules and rules in the light of its present local conditions.

Requests for service of temporary or stand-by nature are likely to involve three rate and managerial problems aside from those of whether plant may be expanded or operating technique improved to handle demands in excess of normal capacity:

A. Production, transmission and/or distribution capacity.

B. Protective contract requirements.

C. Public policy.

(A) Production, Transmission and/or Distribution Capacity

1. The cost of metering and service facilities to supply the potential demand of the customer may be disproportionate to the probable consumption and hence to the revenue realized under existing rate schedules.

2. Expensive reenforcement of the transmission and distribution system may be required. The load gained through the temporary replacement of oil will be mostly space heating. In many places it will give a high, if not a maximum demand on the existing peak hour, as well as on the maximum day, both already greatly increased by defense industries and their employees.

3. Pipe lines and manufacturing plants may have inadequate capacity to meet the potential demands. The procurement of additional facilities at best would be slow and costly, and may be regarded as virtually impossible except where shown to be necessary for national defense and priorities for the required materials are obtained.

(B) Protective Contract Requirements

Where the capacity of the manufacturing plant, transmission or distribution system is apt to prove inadequate to meet the demands of existing customers plus the potential demand of the new applicant or applicants for service, the latter may be furnished service on an interruptible basis only, or refused service under approved non-discriminatory rules.

Where the margin of capacity above normal requirements is such as to indicate the desirability of supplying such service, it is suggested that consideration be given to inclusion in the contract of provisions of a protective nature along the following lines:

1. That the term of the contract be of a length sufficient to permit the company, by way of minimum charges, to be reimbursed for any extraordinary investment entailed.

2. That the customer shall pay in advance all costs of connection and disconnection (including main and service extensions where provided especially for such service) subject to refund when and if the service becomes permanent.

3. That the service shall be interruptible. Such a provision for other than large commercial and industrial customers is difficult to administer effectively but should serve to assist in the protection of the load of regular customers and to increase the margin of capacity available for the building of permanent load and for defense purposes.

4. That the terms of payment for gas appliances be shortened, particularly house heating equipment. The rental of conversion burners might be discontinued and their sale restricted.

(C) Public Policy

This is a mutual and an important problem of the gas companies and the regulatory bodies. It should best be handled by frank discussion and full understanding of the local conditions.

"In particular, utility commissions and their staff technicians might be remiss in their duty to the public if they 'fail to question sharply any rate for stand-by or auxiliary service which appears to be less than or equal to the rate for complete service.' Under such circumstances, the utility should be required to show that its proposed rate is on a higher level than a complete service rate."*

In those situations where there is an insufficient margin of capacity to justify the risk of impairing the service to regular customers and to defense industries and their employees by taking on additional business of doubtful permanency, requests for such service may raise an important public relations problem. It is essential that the policy of the company and of the gas industry generally be

explained in a manner which will forestall so far as possible adverse criticism for declining to supply this type of load. The interests of regular customers and of national defense rank first among the obligations of the gas industry and it should be emphasized that no company can provide temporary or emergency auxiliary service which may be detrimental to those interests.

A MASSACHUSETTS LAW

*Supply of Gas or Electricity Enforced.***—On written petition of any person, having a residence or place of business in a town where a corporation is engaged in the manufacture, transmission or sale of gas or electricity, aggrieved by its refusal or neglect to supply him with gas or electricity, the department may, after notice to the corporation to appear at a time and place therein named to show cause why the prayer or such petition should not be granted, issue an order directing and requiring it to supply the petitioner with gas or electricity, upon such terms and conditions as are legal and reasonable; provided, however, that if such corporation is engaged in such town solely in the transmission of electricity or gas such order shall not be made where it appears that compliance therewith would result in permanent financial loss to the corporation.

In amplification of this law some gas companies in Massachusetts have included specific protective provisions in their rules.

Very truly yours,

Rate Committee
C. L. Follmer, Chairman.

Subcommittee:
Robb Quinby, Chairman
S. S. Mason
A. I. Phillips

* Regulatory Problems Incidental to Customer-Owned Generating Plants. E. Irvine Rudd, Annual Conference of State Utility Commission Engineers. May 13-15, 1941.

** Chapter 164, Paragraph 92, Annotated Laws of Massachusetts.

Over 265 Satisfied
"Carboseal" Anti-Leak *users*

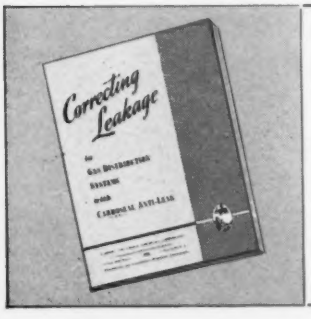
. . . Get Long-Term, Low-Cost Correction of Dry Bell-and-Spigot Joint Leakage

MORE than 265 gas properties the country over are now using "Carboseal" anti-leak treatment to correct packed bell-and-spigot joint leakage in systems distributing dry gas. And they get results! . . . The first three treatments recently applied to one mile of four-inch main reduced leakage 83 per cent. Another 1500 feet of four-inch main treated in the same way showed a leakage reduction of 82 per cent . . . Nine hundred feet of six-inch main treated as a test case showed 100 per cent leakage reduction. As a result, this company is treating and placing in service a number of cast iron mains that had previously been abandoned.

Experience shows that joints treated with "Carboseal" anti-leak keep gas inside the main and stay tight indefinitely. Joints treated eight years ago are still tight today on the soap test . . . And the cost of this treatment is surprisingly low. The average of the actual costs of 16 users who treated over 200 miles of main was 50 cents per joint.

In addition, "Carboseal" anti-leak treatment saturates dirt and rust lying in the main, holding it in place and preventing it from being carried into customer appliances.

You too can do what over 265 satisfied users have already accomplished with this accepted method of reducing unaccounted-for gas loss. Plan now to start using "Carboseal" anti-leak treatment in *your* system.



Send for this Book

This 20-page book tells more about "Carboseal" anti-leak treatment—how it can be applied by either the gravity or the hose method, what equipment is needed, how much the treatment costs, and what results can be obtained. A request on your company letterhead will bring you a copy, without obligation. Write for *your* copy *now*.

CARBIDE AND CARBON CHEMICALS CORPORATION
Unit of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York, N. Y.

The word "Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

Federal Installment Selling Regulations

OF VITAL interest to both gas companies and equipment manufacturers is "Regulation W—Consumer Credit," adopted August 21, 1941, by the Board of Governors of the Federal Reserve System. This limitation on the terms of installment selling and consumer credit is one phase of the effort being made by the government to combat inflationary developments.

What is Covered

The regulations apply to "instalment credit for financing and refinancing purchases of consumers' durable goods the production of which absorbs resources needed for national defense." Virtually all domestic gas appliances are included in the list of articles affected.

To Whom Does the Regulation Apply

"The regulation applies, in general, to any person who is engaged in the business of making extensions of instalment credit, or of discounting or purchasing obligations arising out of extensions of instalment credit. It applies whether the person so engaged is acting as principal, agent, broker or otherwise, and whether the person is a bank, loan company, or finance company, or a person who is so engaged in connection with

any other business, such as by making such extensions of credit as a dealer, retailer, or other person in connection with the selling of consumers' durable goods.

"'**Person**' means an individual, partnership, association, or corporation.

"'**Extension of Credit**' means any loan or mortgage; any instalment purchase contract, any conditional sales contract, or any sale or contract of sale under which part or all of the price is payable subsequent to the making of such sale or contract; any rental-purchase contract, or any contract for the bailment or leasing of property under which the bailee or lessee either has the option of becoming the owner thereof or obligates himself to pay as compensation a sum substantially equivalent to or in excess of the value thereof; any contract creating any lien or similar claim on property to be discharged by the payment of money; any purchase, discount, or other acquisition of, or any extension of credit upon the security of, any obligation or claim arising out of any of the foregoing; and any transaction or series of transactions having a similar purpose or effect."

The scope of the regulation is very broad. Installment loans as well as installment sales are covered; so that a person who is limited in purchasing an article directly on the installment plan may not use his personal credit to avoid by indirect means the limitations established by the Federal Reserve System.

Licenses Required

"A general license is hereby granted to all persons engaged on or before December 31, 1941 in the type of business described . . . **Provided, however,** That such general license terminates at the close of December 31, 1941 for every person who has not registered on or before that date.

"Registration may be accomplished by filing, with the Federal Reserve Bank of the district in which the main office of the Registrant is located, a registration statement on forms obtainable from any Federal Reserve Bank or branch."

Installment Sale Regulations

"(*a*) **Maximum Amount of Credit.**—The deferred balance shall not exceed the maximum credit value of the listed article as shown hereafter.

"(*b*) **Maximum Maturity.**—The maturity shall not exceed that specified for the listed article.

"(*c*) **Amounts of Payments.**"—With certain unimportant exceptions, "the instalments in which the time balance is repayable shall be substantially equal in amount or be so arranged that no instalment is substantially greater in amount than any preceding instalment.

"(*d*) **Intervals of Payments.**—The instalments shall be payable at approximately equal intervals not exceeding one month," with certain unimportant exceptions.

"(*e*) **Minimum Monthly Payment.**"—After January 1, 1942 (with certain unimportant exceptions) "the schedule of payments shall call for instalments aggregating not less than $5.00 per month.

"(*f*) **Statement of Transaction.**—The extension of instalment sale credit shall be evidenced by a written instrument or record, and there shall be incorporated therein or attached thereto a written statement, of which a copy shall be given to the obligor as promptly as circumstances will permit, and which shall set forth (in any order) the following information:

(1) A brief description identifying the article purchased;

(2) The *bona fide* cash purchase price of the article and accessories purchased (including any sales taxes thereon) and of any services (excluding any interest or finance charge and the cost of any insurance) rendered in connection with the acquisition thereof, itemized;

(3) The amount of the purchaser's down payment (A) in cash and (B) in goods accepted in trade, together with a brief description identifying such goods and stating the monetary value assigned thereto in good faith;

(4) The deferred balance, which is the difference between items (2) and (3);

(5) The amount of any insurance premium for which credit is extended and of any finance charges or interest by way of discount included in the principal amount of the obligation, or the sum of these amounts;

(6) The time balance owed by the purchaser, which is the sum total of items (4) and (5); and

(7) The terms of payment."

Installment Loans

If an installment loan is secured by any listed article, then the same general conditions apply as if the article were purchased directly on the installment plan.

Miscellaneous installment loans of $1,000 or under apparently must be repaid within 18 months.

Exceptions

The regulations do not apply to the following:

"(*a*) Any extension of credit which is secured by a *bona fide* first lien on improved real estate duly recorded.

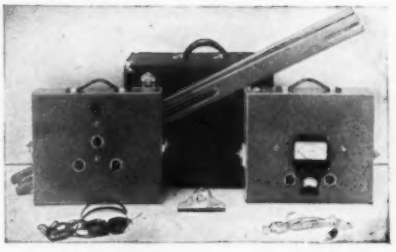
"(*b*) Any extension of credit over $1,000 which is made for materials and services in connection with repairs, alterations, or improvements upon urban, suburban, or rural real property in connection with existing structures, even though such materials include articles listed in Group C or D, provided the *bona fide* cash purchase price of such articles so listed does not exceed 50 per cent of the total over-all deferred balance.

"(*c*) Any extension of instalment loan credit which is made to or for a student for *bona fide* educational purposes.

"(*d*) Any extension of instalment loan credit if (1) the proceeds are to be used

THE OLD WAY

The NEW M-SCOPE WAY



To Locate PIPE and CABLE

IT is no longer necessary to GUESS at the location of mains or cables, or wonder how deep they are buried.

There need be no further MYSTERY about dead ends, valves, manholes, and drip boxes.

YOUR NAME ON THE COUPON BRINGS THIS BOOK FREE

JOSEPH G. POLLARD CO., INC.

PIPE LINE EQUIPMENT

152 Ashland Pl. BROOKLYN, N. Y.

Please send book describing the M-SCOPE

Name .....

Company .....

Address .....

for *bona fide* medical, hospital, dental, or funeral expenses and (2) the income of the obligor available for the purpose is such that he could not reasonably meet the requirements of this regulation otherwise applicable.

"(*e*) Any extension of credit to remodel or rehabilitate any dwelling or residence which the Defense Housing Coordinator, or his authorized agent, shall designate as being for "defense housing" as defined by the Coordinator. Information regarding the procedure for obtaining such a designation may be obtanied through any Federal Reserve Bank or branch.

(*f*) Any extension of instalment sale credit which is to be repaid at approximately equal intervals and in approximately equal instalments, the last of which matures within three months after the first day of the calendar month next following such extension.

"(*g*) Any extension of credit to a dealer in any listed article, whether a wholesaler or retailer, to finance the purchase of any such article for resale.

"(*h*) Any extension of credit which is to be repaid within not more than twelve months and is made to a *Bona fide* salesman of automobiles in order to finance the purchase of a new automobile to be used by him principally as a demonstrator.

"(*i*) Any extension of credit which is for the purpose of financing a premium in excess of one year on a fire or casualty insurance policy if the proceeds are paid directly to the insurance agent, broker, or company issuing or underwriting the insurance and the extension of credit is fully secured by the unearned portion of the premium so financed.

"(*j*) Any extension of instalment sale credit made on or before December 31, 1941, which (1) does not bring above $50 the total of the obligor's outstanding indebtedness to the Registrant arising out of extensions of instalment sale credit made on or after September 1, 1941, and (2) is to be repaid at approximately equal intervals and in approximately equal instalments the last of which matures within 9 months after the first day of the calendar month next following such extension."

Existing Contracts Not Affected

The regulation does not apply to contracts made prior to September 1, 1941.

Stricter Requirements Permitted

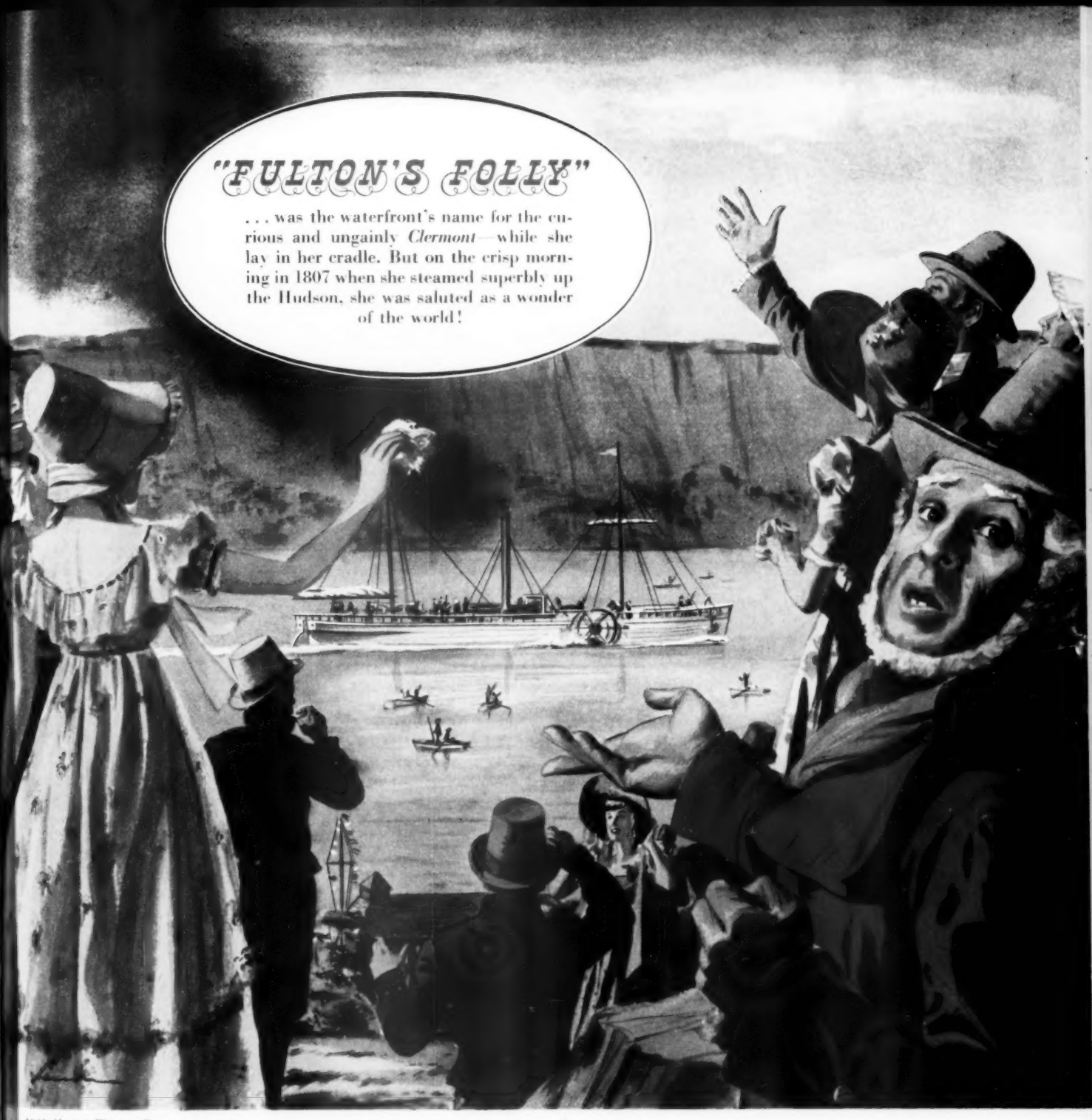
"Nothing in this regulation shall be construed to modify the right of any Registrant to refuse to extend credit, or to extend less credit than the amount permitted by this regulation, or to require that repayment be made within a shorter period than the maximum permitted by this regulation."

Listed Articles, Maximum Maturities, and Maximum Credit Values.—For the purposes of the regulation the following maximum maturities and maximum credit values apply to the following list of articles:

Articles of Consumers' Durable Goods (Whether new or used)	*Maximum Maturity in Months*	*Maximum Credit Value in per cent of Basis Price*
Group A		
1. Automobiles (passenger cars designed for the purpose of transporting less than 10 passengers, including taxicabs)	18	66–2/3
Group B		
1. Aircraft (including gliders)	18	66–2/3
2. Power driven boats, and motors designed for use therein, other than boats or motors designed specifically for commercial use	18	66–2/3
3. Outboard boat motors	18	66–2/3
4. Motorcycles (two or three-wheel motor vehicles, including motor bicycles)	18	66–2/3
Group C		
1. Mechanical refrigerators of less than 12 cubic feet rated capacity	18	80
2. Washing machines designed for household use	18	80
3. Ironers designed for household use	18	80
4. Suction cleaners designed for household use	18	80
5. Cooking stoves and ranges with less than seven heating surfaces	18	80
6. Heating stoves and space heaters designed for household use	18	80
7. Electric dishwashers designed for household use	18	80
8. Room-unit air conditioners	18	80
9. Sewing machines designed for household use	18	80
10. Radio receiving sets, phonographs, or combinations	18	80
11. Musical instruments composed principally of metals	18	80
Group D		
1. Household furnaces and heating units for furnaces (including oil burners, gas conversion burners, and stokers)	18	85
2. Water heaters designed for household use	18	85
3. Water pumps designed for household use	18	85
4. Plumbing and sanitary fixtures designed for household use	18	85
5. Home air conditioning systems	18	85
6. Attic ventilating fans	18	85
7. New household furniture (including ice refrigerators, bed springs, and mattresses but excluding floor coverings, wall coverings, draperies, and bed coverings)	18	90
8. Pianos and household electric organs	18	90
Group E		
1. Materials and services (other than materials listed in Group C or D) in connection with repairs, alterations, or improvements upon urban, suburban, or rural real property in connection with existing structures, provided the deferred balance does not exceed $1,000	18	No limitation

Basis Price of Listed Articles.—The *basis price* of any listed article other than an automobile shall be the *bona fide* cash purchase price of the article and accessories purchased, including any sales taxes thereon and any *bona fide* delivery and installation charges, *minus* the amount of any allowance made by the seller for any article traded-in by the purchaser (including as such a trade-in anything which the seller buys or arranges to have bought from the purchaser at or about the time of the purchase of the listed article).

Certain modifications apply in computing the basis price of automobiles. Any inquiry relating to this regulation, including requests for copies thereof, should be addressed to the Federal Reserve Bank or Federal Reserve branch bank of the district in which the inquiry arises.


"FULTON'S FOLLY"
. . . was the waterfront's name for the curious and ungainly *Clermont*—while she lay in her cradle. But on the crisp morning in 1807 when she steamed superbly up the Hudson, she was saluted as a wonder of the world!

1941, Harper-Wyman Co.

Nothing convinces like demonstration

TODAY it is vitally important for the gas industry to prove *its* point by showing the public that "Gas does it best". And nothing does this more convincingly than a demonstration of the Harper Burner System.

When you demonstrate the Harper principle of control, you show modern cooking at peak efficiency. You prove the advantages of Harper's unique "2 burners in 1" . . . the time-saving speed of the STARTING BURNER . . . the dependability and economy of the tiny, efficient COOKING BURNER . . . the unequalled Harper *range* of heats: the *right* heat for every cooking requirement!

For greater profits . . . wider acceptance of gas as a fuel . . . connect a Harper-equipped range to gas on your sales floor. Sales climb UP when you *demonstrate* the modern gas range!

DEMONSTRATES THAT "GAS DOES IT BEST"

HARPER
BURNER SYSTEM

TURN THIS PAGE FOR PROOF THAT DEMONSTRATION PAYS

SHOW YOUR CUSTOMERS

how they can enjoy COOLER KITCHENS...

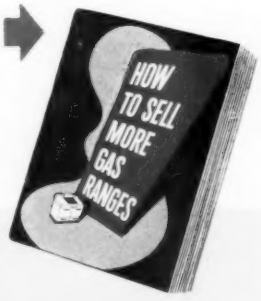
You can offer your customers kitchens kept up to 9 degrees cooler with a Harper-equipped range. Why not *convince* them of this . . . show them *how* the Harper Burner System brings them so much extra comfort?

Prove to them with a Pyrex vessel that the small but amazingly accurate flame of the Harper COOKING BURNER keeps water boiling, foods cooking in a covered vessel, with the *minimum* of gas—and heat.

Demonstrate that no room-warming heat comes up around the sides of the vessel. Hold your hand there. Invite your customers to do so. Then point out how little heat-causing *steam* is created by the "gentle boiling" of the Harper COOKING BURNER. Your customers know that steam raises kitchen temperature, adds to discomfort!

Once they see these simple but convincing demonstrations of Harper control, and operate this responsive System themselves, your customers will be even more "sold" on the modern gas range. Much of your selling will have been accomplished!

FREE BOOKLET: "How to Sell More Gas Ranges," contains a series of quick, convincing sales acts, planned to dramatize the advantages of the modern gas range. Send for copies. *Harper-Wyman Company*, 8562 Vincennes Avenue, Chicago.



QUALITY PLUS SERVICE

GAS RANGES
WELBILT
ORIOLE
CHAMBERS

HARDT & REID
Factory Distributors
168 LIVINGSTON STREET
BROOKLYN, N. Y.
Tel. MAin 4-3433 - 3434

REFRIGERATORS
FRIGIDAIRE
G E HOT POINT
ELECTROLUX

April 26, 1941

Harper-Wyman Company
8562 Vincennes Avenue
Chicago, Illinois

Gentlemen:

It occurred to us that it would be of interest to your company to know that on our sales floor we not only sell ranges equipped with the Harper Burner system, but we also demonstrate them.

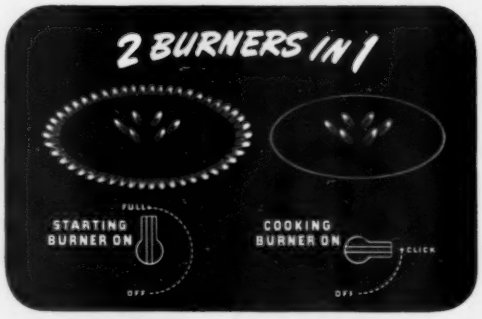
Realizing the great efficiency and economy features of this burner for top burner cooking, we connected to a gas line an Oriole Range, manufactured by the Standard Gas Equipment Corporation.

The results were extremely satisfying. Our men report sales resistance greatly diminished with this "Seeing is Believing" method. The net benefit is customer good-will and definitely increased sales volume, which is of prime importance to dealer and manufacturer.

Sincerely yours,
Hardt & Reid

AWH:AG

Proof That Demonstration Pays



The Harper Burner System operates on the unique principle of "2 burners in 1" . . . a* STARTING BURNER *plus a small, economical* COOKING BURNER, *both controlled by the same handle. It is subject to finer gradations of low heats—greater control and economy—than any other cooking unit made.

HARPER BURNER SYSTEM

—one of the standards of top burner performance under Cp

Gas Burning Equipment As A Fixture

By
Leslie Childs

THE QUESTION of when gas burning equipment becomes a fixture, so as to pass with the sale of the premises to which attached, is one of importance to the sellers thereof. And especially may this be true where the equipment is sold upon the installment payment plan, even though title is retained by the seller pending full payment.

For here if the article sold becomes a fixture, it may pass upon the sale of the premises to a third party, who has no knowledge of the retained title. Consequently, the seller may be left high and dry, in so far as collecting any balance due under his contract of sale is concerned.

True the subject here raised is one of many angles, and each case of this kind must necessarily turn upon its facts. But as an illustration of judicial reasoning thereon, and the possible danger to a seller of gas burning equipment in situations of this kind, the following case will serve.

Gas Burning Equipment Installed In Furnace

In this case, briefly stated, a gas company sold and installed a gas burner in a furnace in a dwelling house, under contract with a tenant. Under the contract, the gas company retained title to the equipment pending full payment therefor, and the contract was duly recorded as required by law.

The tenant moved out of the premises before the burner was paid for leaving the latter in the furnace. The premises were then sold under a mortgage, and passed into the hands of new owners for value. The latter had no knowledge of the gas company's title retention contract covering the gas burning equipment that had been installed in the furnace.

Paper read before American Gas Association, Technical Section, The First Annual Conference on the Operation of Public Utility Motor Vehicles, Pittsburgh, Pa., April 21-22, 1941.

When the gas company learned of this change in the ownership of the premises, it demanded the right to remove the burner, under its contract, or that the balance due upon the account be paid. This balance due, by the way, amounted to a little over $100. The new owners of the premises declined to admit any liability under the claim, and contended that the equipment passed to them as a fixture.

The gas company thereupon filed the instant suit to recover under its title retention contract. The lower court found for the gas company, evidently on the ground that the equipment remained personal property, since there was evidence that it could be removed without damage to the premises. The property owners appealed, and the higher court in reversing the judgment reasoned, in part, as follows:

What The Court Decided

"We think that the gas burner became as much a part of the realty as the furnace itself, or the plumbing fixtures in the house. The owner would have no right to remove the burner if he had installed it. He could have given a valid retention of title contract for its purchase and if it had been duly recorded the seller could have enforced its rights.

"The reason why an owner may make such a contract valid as against subsequent purchasers is *** because the record of such agreement affords notice to purchasers of the agreement. *** The difficulty about this case is that the owner of the realty did not sign the agreement.***

"A search of the records of realty and personalty titles *** as to the owners of the property would reveal no facts with reference to the contracts of the tenants. It is true here that the seller [gas company] did all the law required and from one view it would seem that it should be protected. However, it made the contract with one who had no authority in law to make it. The tenant certainly could not have made such an agreement concerning a brick chimney, or weather boarding and if he had, the seller would have been precluded from enforcing it. ***

"Under the facts of the case the court [lower court] erred in rendering judgment for the plaintiff [gas company]. The evidence demanded the finding that the fixture [burner] became a part of the realty and in the absence of any right on the part of a tenant to make such an agreement which would constitute notice to a purchaser of the realty it was error to find for the plantiff. Judgment reversed." (4 S.E. (2) 607).

Conclusion

As noted in the beginning, the subject of fixtures, in relation to gas burning equipment, is one of many angles. So the outcome of a case of this kind may depend upon a number of factors. The character of the equipment, the nature of its attachment to the premises, the relationship of the parties to the sales contract, and perhaps some statutory rule of the state in which the action arises, may have to be considered.

However, this much may be said. Where equipment of this kind is sold, which in its use will be more or less permanently attached to realty, the seller should be very sure of the adequacy of any title retention contract that is relied upon for security of the account. For here, if the equipment is held to be a fixture, it will usually pass along with the premises, upon the sale of the latter to third parties without notice, by record or otherwise, of the retention contract.

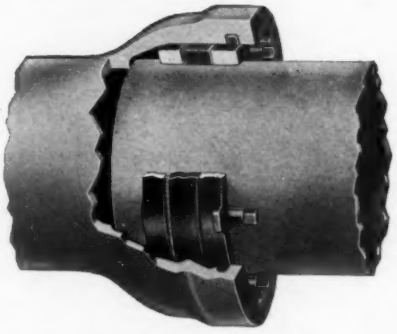
A nice point this for sellers of such equipment and appliances to have in mind when sales policies are being formulated; this to the end that unexpected losses from this source may be guarded against. And, as an example of the possible danger of an oversight here, the case reviewed is of force and value.

DRESSER *Bellmaster* STYLE 85

The New CIP Mechanical Joint That's All Ready "To Go"

6" CIP Dresser Bellmaster Joint, Style 85. Comes "all in one piece," conveniently boxed for easy handling and stocking. Only a wrench required to install.

Easy to Handle • Quickly Installed Makes Joints Permanently Tight



Advantages at every step—before installation, during installation, after installation. That's why everyone's so enthusiastic about the new Dresser Bellmaster Joint. *Completely* factory-assembled, simplifies stocking and handling. Installed in from 2 to 5 minutes by ordinary workmen.

Note how the Bellmaster fits snugly *inside* the bell, offering complete protection against corrosion. See how this "floating joint," with its large-section resilient gasket, allows deflection of pipe in any direction and absorbs longitudinal movement caused by expansion and contraction. But get the facts first hand! Send today for a sample Bellmaster Joint. Use the coupon below.

DRESSER MANUFACTURING COMPANY • BRADFORD, PA.

In Canada: Dresser Manufacturing Co., Ltd., 60 Front St., W., Toronto, Ont.

This Coupon Brings You A Full-sized Bellmaster.

Without cost or obligation to us send a full-sized Style 85 Bellmaster Joint for our inspection. We understand you will pay all shipping charges.

Name..... Address.....

Title..... City.....

Company..... State.....

FOR SIMPLER, FASTER, EASIER JOINING OF CAST-IRON PIPE

How to Save H_2S

PURIFICATION ON A GUARANTEED COST BASIS!

Because we can forecast the probable results you will obtain from use of a Lavino Activated Oxide—in your own plant, under your own conditions—we usually are able to offer a GUARANTEE of maximum cost of H_2S removal. (If, in your trial of a Lavino Activated Oxide, your costs exceed our estimate — we pay the difference.) The savings are yours; the risk is ours.

And, though savings on purification will never make or break the gas company, we submit that savings reflect credit on those responsible for this phase of operations . . . and that *any* saving, *safely* made, always is worthwhile. It is good business.

Your questions about this unusual Plan will be promptly answered. No obligation, of course.

E. J. LAVINO AND COMPANY
1528 WALNUT ST., PHILADELPHIA, PA.

LAVINO "ACTIVATED" OXIDES

GREATER CAPACITY . . . GREATER ACTIVITY . . . LESS OXIDE REMOVES MORE H_2S!

Lavino Activated Oxides are made in the U. S. and are disinfected against fungi by a special Lavino process.

Forecasting Winter-Day Load In A Natural Gas Territory

Part 1

By

P. E. Beckman, J. J. Pugh, E. G. Arnedt

Gas Construction and Operation Department, Pacific Gas and Electric Company

FROM the earliest era of recorded history men have desired to know the future course of events. The ancients would consult their local oracles and hope for some sign which could be interpreted to mean propitious days ahead. The modern way to scan the future is first to explore the past and collect factual data from the record; then after observing past performance to establish, impartially, future trends and trace a logical course of things to come. Perhaps it is presumptious to look beyond the immediate present, but in the natural gas industry management is particularly concerned about the years ahead as it must be assured not only of reserve supply to meet anticipated demands but of transmission facilities adequate for the task of meeting a growing load. The object of this paper is to present a procedure, based upon a logical approach to the problem of forecasting, that can be used to determine the future load requirements of a natural gas area.

Transmission mains are the life lines of the industry and represent a considerable investment since they often come from fields far removed from the centers of load. It is prudent for management to hew close to the line when balancing transmission capacity with load demands as the capital outlay to tap any source of supply is sizable and, generally, the life and rate of production of the field sources are not too well established. Careful prediction of probable gas requirements is one means of removing some uncertainty from the problem of transmission line adequacy.

Periods of complacency interrupted by belated attempts to diagnose and cure trunk line weaknesses rarely result in an economic program of expenditures. Neither can adequacy be assured by the expedient of providing line capacity for load estimates which are no more than speculative extrapolations of past winter loads. Too often are such estimates indiscriminately used without regard for the possible severity of minimum temperatures or the effect of probable changes in some of the other variable factors going to make up the load. If safety and economy are to be achieved, records and trends should be carefully analyzed and an attempt made to produce a reasonable long-range prediction of load requirements.

Presented at the Technical Section, Annual Convention of the Pacific Coast Gas Association, Monterey, California, September 11, 1941.

Recognizing the Need for a Dependable Method

The early years following the initial change-over to natural gas in 1930 witnessed heavy increases in sales; lower rates, intensified sales efforts, and more general utilization of the new commodity were all tending to increase gas usage. High winter demands were anticipated as gas was being accepted for heating purposes, but a surprise came in December, 1932 when daily mean temperatures as low as 26 degrees were experienced in areas of otherwise equable climate.

Fortunately, transmission facilities were still oversize and the spell was weathered without much inconvenience. After being lulled into a false sense of security by three ordinary winters, the fourth was punctuated in January, 1937 by two severe cold snaps. This spell was not so easily weathered and the following warm winters deceived no one. Transmission capacity was no longer oversize, and the prospect of similar cold snaps in future years caused considerable apprehension. The question arose as to whether the load would increase indefinitely at the existing rapid rate or be retarded by some saturation effect. Unless this could be determined it would be difficult to outline an economical program for securing additional transmission capacity. It was finally decided to study and analyze the peculiarities of gas load and, further, to devise a method for predicting the possible future requirements under conditions of minimum temperatures. Climatological records indicated that the low mean daily temperatures of December, 1932 could well be used for basic minimums. The work of adapting past records to the problem began in 1937 and required the better part of a year for completion.

Description of the Territory Served and the Nature of the Gas Load

The natural gas territory of the Pacific Gas and Electric Company is composed of eleven operating areas each of which contains at least one natural load center. Fortunately this division of the territory is particularly adapted for the load study outlined herein. Pertinent operating records are readily available and each area possesses reasonable homogeneity with respect to ambient temperatures, type of customer, and heating value of distributed gas. In order that the reader may gain an impression of the type of gas territory involved and the scope of the undertaking, a description of the area is provided in Table I. Rounded figures of recent date are given for volumes of sales and the number of customers. Listed temperatures are the low mean daily temperatures which occurred in December, 1932 and which constitute the basic minimums used for load predictions.

As is the case with other natural gas utilities, a considerable amount of gas is sold for industrial purposes under surplus rates, with the proviso that customers in this classification be prepared to forego the use of natural gas during gas shortages. These customers have often been ordered off the lines, but experience has shown that the condition of standby equipment and the nature of some loads causes a lag in the shut-off, resulting in an effective curtailment in

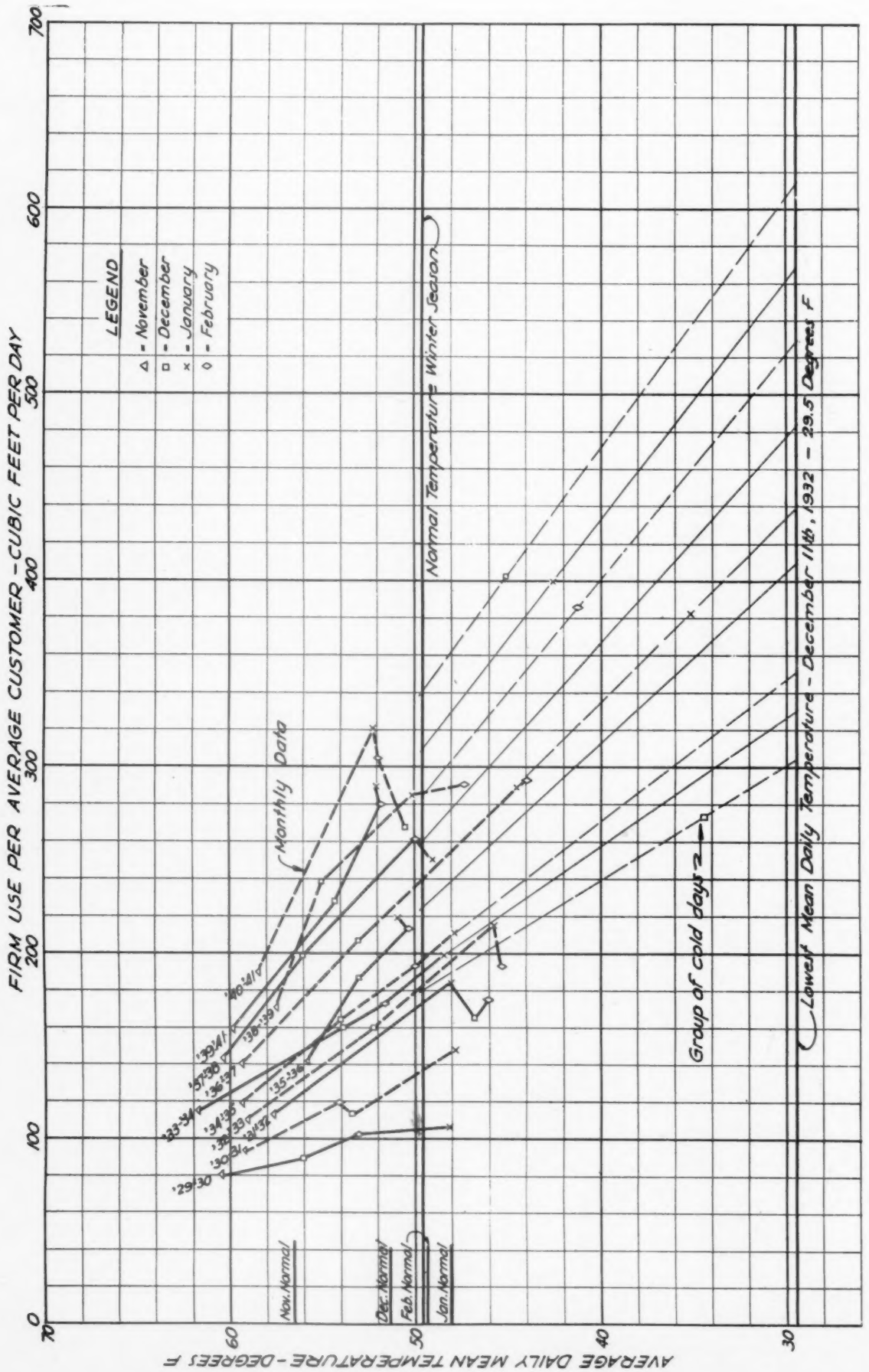


FIG. 1. FIRM GAS USE PER CUSTOMER VERSUS MEAN TEMPERATURE - AREA B. SALES ADJUSTED TO EQUIVALENT VOLUMES AT 1000 BTU.

TABLE 1

Area	*Basic Minimum Temperature*	*Number of Firm Customers*	*Annual Sales Thousands cu. ft.*		*Type of Area*
			Firm	*Surplus*	
A	31.0° F.	212,000	12,500,000	8,100,000	Metropolitan.
B	29.5	175,000	10,100,000	10,500,000	Suburban, commercial & industrial.
C	29.5	67,000	4,400,000	4,600,000	Suburban & agricultural.
D	25.5	46,000	2,800,000	2,000,000	Agricultural area.
E	29.5	42,000	2,100,000	2,900,000	Suburban & agricultural.
F	24.5	37,000	2,000,000	4,500,000	Agricultural area.
G	29.0	35,000	2,000,000	1,500,000	Agricultural center.
H	29.5	18,000	1,300,000	500,000	Oil & agricultural center.
J	31.0	15,000	800,000	2,500,000	Agricultural area.
K	25.0	11,000	500,000	600,000	Agricultural area.
L	25.5	2,000	100,000	9,000	Agricultural center.

times of stress of no more than 90% of the total surplus demand. To this group of curtailable customers are also to be added steam and electric stations (owned by the company) and oil refineries operating under transport agreements, each of which can be readily changed over to fuel oil. The remaining customers are guaranteed service at all times and may be classified as Firm (essential gas) customers. Though most of these are Residential (domestic) certain others using gas for Commercial, Industrial, or Building Heating purposes, are also included in the Firm bracket. Demands for all Firm gas must, of course, be met; and since all of these customers seem to reach their maximum use during the winter months, that time of the year becomes the critical season. Of primary importance, therefore, is the estimation of these Firm customers' probable winter requirements: the general subject of study in this paper.

Variables Affecting Firm Gas Load

The four fundamental variables which affect the magnitude of winter gas loads in a natural gas area are: 1) number of customers, 2) gas usage per average customer, 3) heating value of the gas being served, and 4) existing ambient temperatures. The last three are so interrelated that the above order is no indication of their importance, the relative effect of each on the total load obviously varying with the locality.

While the number of customers is the most direct index of the magnitude of the load, the use per customer serves to indicate the level of the gas business in a given area. Humans exist under varying degrees of comfort and convenience, and under different housing arrangements. A spacious residence or hotel each constitutes a single customer, but so does a tiny apartment or home. In any area the use per average customer will be weighed by the relative number of high- and low-level customers therein. This usage will be further affected by the heating value of the gas served: if the heating value increases the usage will decrease, and vice versa.

The average temperature during a winter period will noticeably affect the gas sales in an area where gas is used for space heating. In fact, the average temperature on a given day bears a direct relation to the Firm gas requirements for that day. Other weather conditions such as wind, humidity and hours of sunlight affect the load to some extent but these are rather intangible and their influence will be discussed later.

The four tangible variables mentioned above are conveniently determined from records available to any utility; by analyzing each separately instead of collectively, more reliable trends can be established and a much better forecast made. For example:

Given a graph of the historical growth in the number of customers over a period of years, anyone familiar with an area can make a fair prediction of the number of customers to be expected in the future. In a densely settled area bounded by arbitrary or political limits, or by physical barriers such as waterways, the number of customers will finally approach some saturation limit. The number might even be reduced with an increase in population if single-meter apartment houses were to replace individual dwellings to any extent. On the other hand, sparsely settled areas with no confining boundaries may experience either continued or abnormal growth in the number of customers, restricted only by the rational limits of building and business activity. Naturally, before historical data are employed to establish current trends, adjustments should be applied for past prosperity or recession waves. Likewise, when such waves are indicated for the immediate future they should shape predictions as well.

Even though influenced by varying rate charges and wage levels, the use per customer remains the most important variable affecting future gas load. Existing use per customer in an area, together with the relative ceilings of use reached by older and more saturated areas, provides a basis for estimates of growth more rational than might otherwise be obtained. It is this component of Firm gas with which the paper is principally concerned.

Whether the gas supply to an area comes from a single well or is a mixture from several fields, it rarely happens that future heating values cannot be reasonably predicted; usually the rates of supply from several sources are undergoing a gradual change, or the probable substitution of a new source is a matter of general knowledge.

Obviously, forecasts of temperatures in future years cannot be made, but precautions can at least be taken to provide for recurrence of the lowest temperatures on record. Moreover, if reliable trends are to be established, it is of utmost importance that loads be correlated with the indices of temperature and heating value. For example, it would not be unusual over a year's time for the heating value in a natural gas area to increase by fifty Btu. and reflect a five per cent decrease in gas usage. Nor would it be unusual for the average temperature of a winter month to be higher by a few degrees than that which occurred a year earlier and also reflect a five per cent decrease in gas usage. If adjustments for these effects, totalling ten per cent, were not made, a rather distorted impression of the growth in sales could easily occur.

The effect of slight variations in these two variables alone should indicate the necessity for separate treatment of the others. The adjustment of sales records for variations in heating value is of course simple. In the forecasting procedure which is later described, all gas volumes are adjusted to equivalent volumes of gas at 1000 Btu. (hundredths of a therm) and all correlations and estimates are conducted on this basis. It is not until an estimate is released for general use that the volumes are readjusted for other heating values.

These comments have applied to a

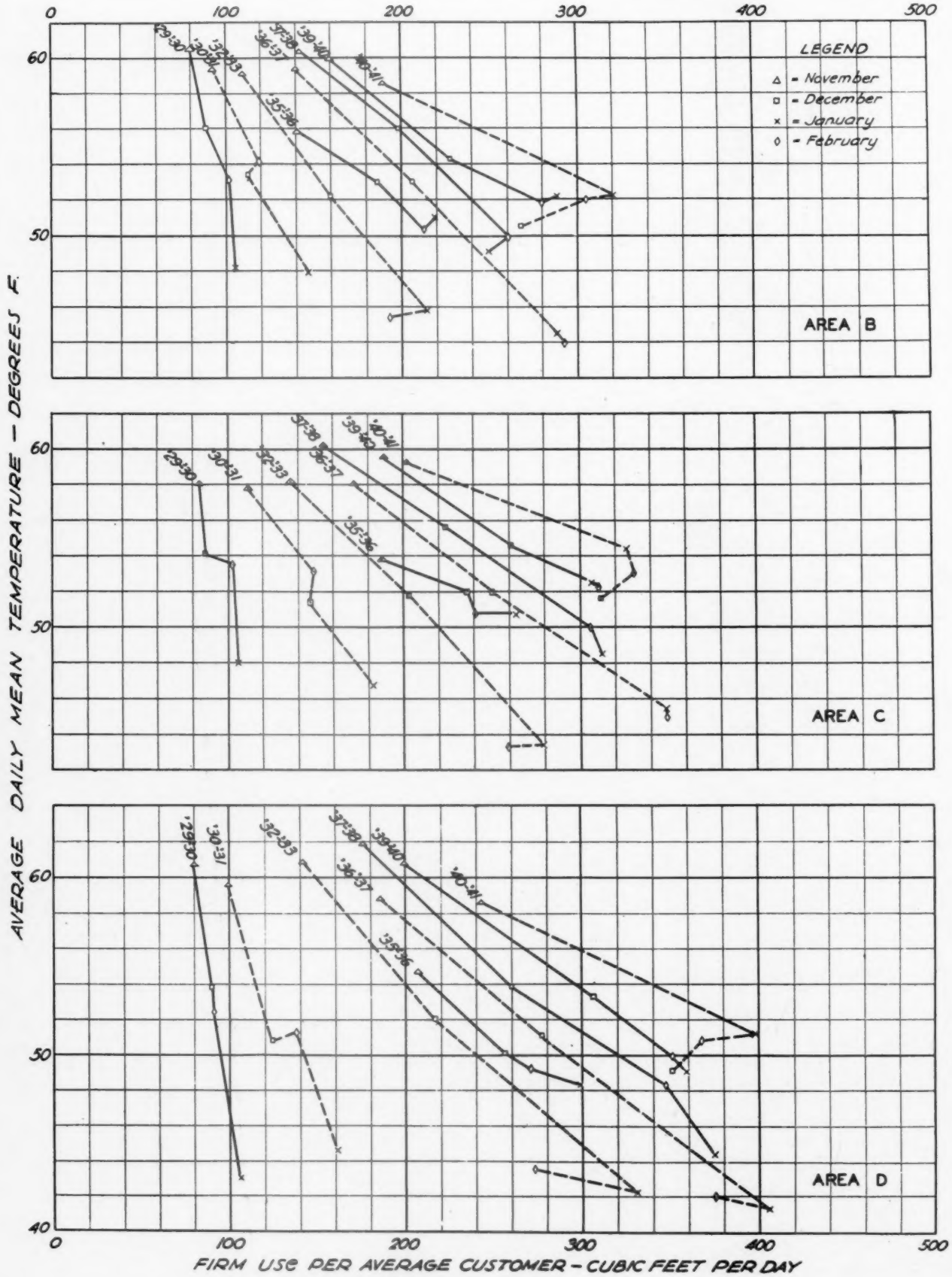


FIG. 2. PLOTS SHOWING SIMILARITY OF USE VS. TEMPERATURE IN WIDELY SEPARATED AREAS - 1000 BTU. BASIS.

single isolated area in a natural gas territory. Seldom is an entire territory subjected to gas of a single heating value, to the same ambient temperatures, or to one class of customers. When any great dissimilarity exists between areas with respect to even one of these variables, it is best to treat each area separately. When a project such as is described in this paper is inaugurated in a utility, it is no small problem to decide how far a break-down should be carried. Initial curiosity and interest in the subject may lead to unnecessary subdivision. The expense required for the yearly maintenance of records is an item to be considered.

The preceding discussion has been confined to the bare rudiments of a load analysis. A variety of other conditions enter the problem as well, but these are peculiar to certain utilities and cannot be discussed in a general fashion. This will become evident as the correlation of variables and forecasting methods employed by the Pacific Gas and Electric Company are described. Where it becomes necessary the reader can make allowances for changes in procedure to suit other conditions.

Correlating Monthly Data From Past Records

If predictions are to be at all reliable, the data which are used for controls must be truly representative. Data from a few short isolated periods should not be used unless there is no other choice, since they may lack sufficient diversity to portray average conditions. The most important controls for predictions are the levels of customer usage in winter and the annual changes in the levels. In order to evaluate these controls correctly the sales of a four-month focal period, November to February inclusive, are employed. On a calendar basis this period generally extends from the 15th of October to the 15th of February, its limits depending upon the average billing date of an area. Past climatological records revealed that in all areas, the coldest days in any winter season had been confined within the focal period of December to February, inclusive. Consequently, in this study these three months constitute the Winter period, and will henceforth be referred to as such. November data were included merely for the purpose of facilitating additional guidance. In each area the following procedure is used in correlating the various monthly data, each of the four months being treated separately.

The volume of Firm sales for the focal month is first adjusted to an equivalent volume of gas at 1000 Btu. The actual monthly average heating value employed for this adjustment must, of course, be for the same focal period. The next step is to divide this adjusted volume by the number of customers and days in the month, thus arriving at the Daily Use per Average Customer on a 1000 Btu. basis.

A parallel determination is made of the Monthly Average Mean Temperature, also on a focal basis, which is the average of the daily mean temperatures. Emphasis should be made of the desirability of employing data from official Weather Bureau Stations whose records are not only consistent but extend over a period long enough to assure reliable normals.

Average Daily Use per Customer for each of the four months in any winter season is plotted against the corresponding Monthly Average Mean Temperature on cross-section paper which has been prepared as follows:

The ordinate shows temperature in degrees F., the top limit being 70 degrees and the bottom accommodating the lowest daily mean temperature of the area. Weather Bureau normals for each of the four months are spotted on this temperature scale, and the average of the normals for December, January, and February is drawn as a horizontal line across the entire cross-section sheet. This average winter normal temperature for the area becomes one of the two fundamental datum temperatures of each area. The abscissa on the plot is a scale for the daily use per average customer in cubic feet of gas at 1000 Btu. The result of plotting points for a twelve-year period on this coordinate system is shown in Fig. 1 which applies to area B of Table 1. This area will henceforth be used as an example of further coordination of data. Points referring to months in one winter season are connected with heavy lines, each point carrying a descriptive monthly marking for identification.

Obviously, since winter seasons generally differ in their degree of cold intensity, customer usage to be successfully studied must first be reduced to a constant temperature level; cold and warm winters must be made directly comparable. The normal winter temperature, year in and year out, is truly representative of the winter season and was therefore selected as the most acceptable base temperature. Customer usage at this temperature is called the Normal Winter Use per Customer. By properly weighing the points for one winter season an average line is assumed through them, and its intersection with the line of normal winter temperature determines the Normal Winter Use per Customer per day for a particular winter season.

The line pattern for the various winters (Fig. 1) was at first confusing and, it is admitted, had the initial investigation been confined to a single small area, the outlook might not have seemed promising. However, work was progressing on all eleven areas simultaneously and, although some of the areas were hundreds of miles apart and subject to different conditions, it was noted that the pattern in all was the same. Obviously, these were not shotgun correlations; since similar irregularities were common to all areas they could have been caused only by statewide peculiarities in weather; subsequent investigation confirmed this opinion. Those intangible weather conditions which were earlier mentioned such as wind, humidity, and hours of sunlight, were having their effect. The climatological records uncovered still another: It seems that for as long as a month, nights may have been cold and the daylight hours warm, or conversely. The effect of this on the gas sendout — ordinarily lower at night than during daylight hours—is obvious. Being cognizant of these effects, the relative importance of any monthly point in a winter season may be weighed to no small extent.

The remarkable similarity of the line pattern in three widely separated areas is shown in Fig. 2 wherein usages for several winter seasons are shown plotted against temperature. It should be pointed out that area B is near the seacoast and almost equidistant from the inland areas C and D, the latter being 150 miles apart.

The result of plotting the Normal Winter Use per Customer per day for area B against years is shown in Fig. 3. The curve is smooth and does not show the irregularities so common to ordinary operating data. It is pertinent to emphasize again that this concept gives one the true picture of winter growth in customer usage through the years. In addition to charts showing annual customer usage, parallel curves on the average number of winter customers and the winter surplus use should be kept as essential parts of the study. Shown in Fig. 4 is the average number of winter customers in area B.

One more word of caution should be added concerning the analysis of

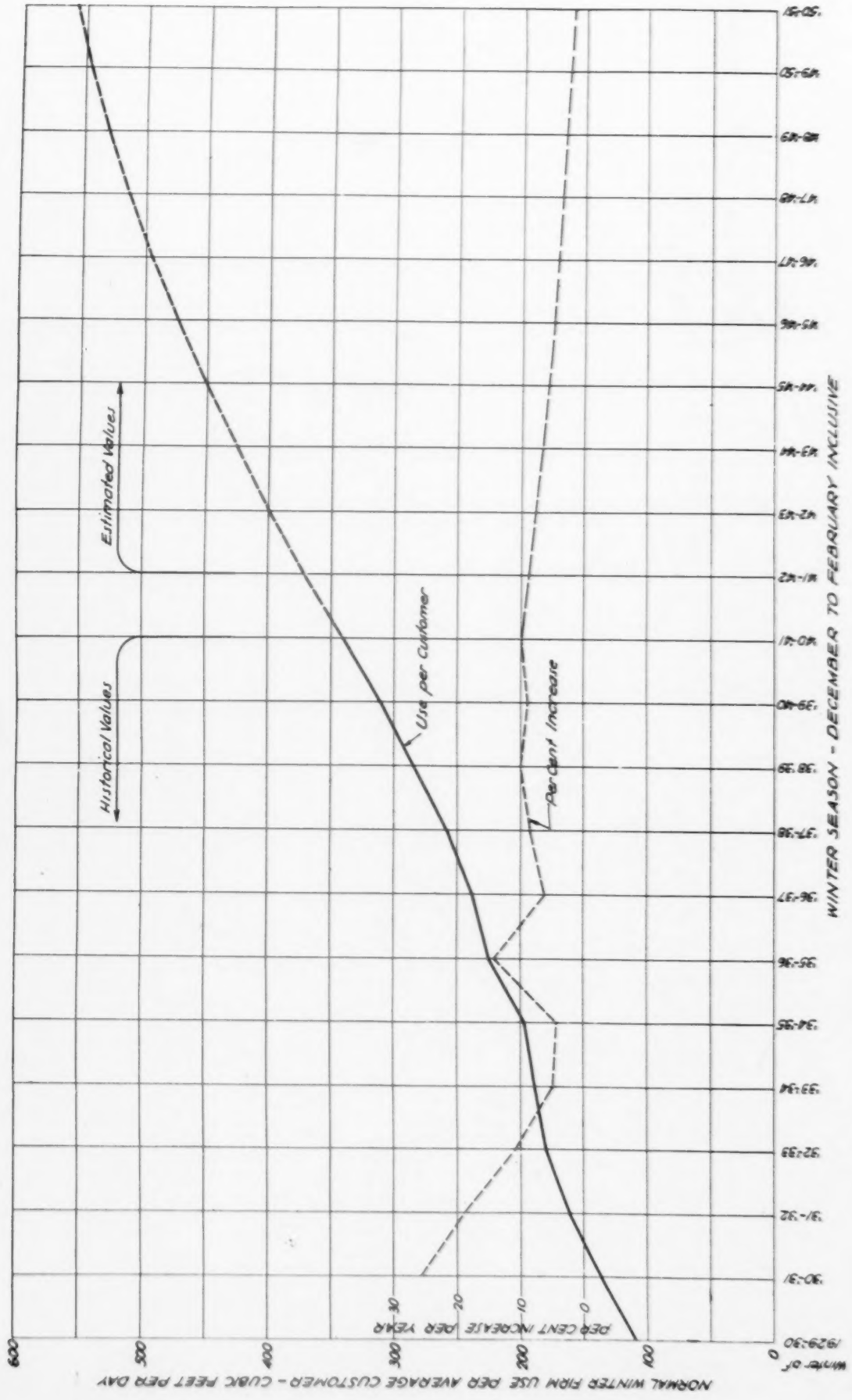


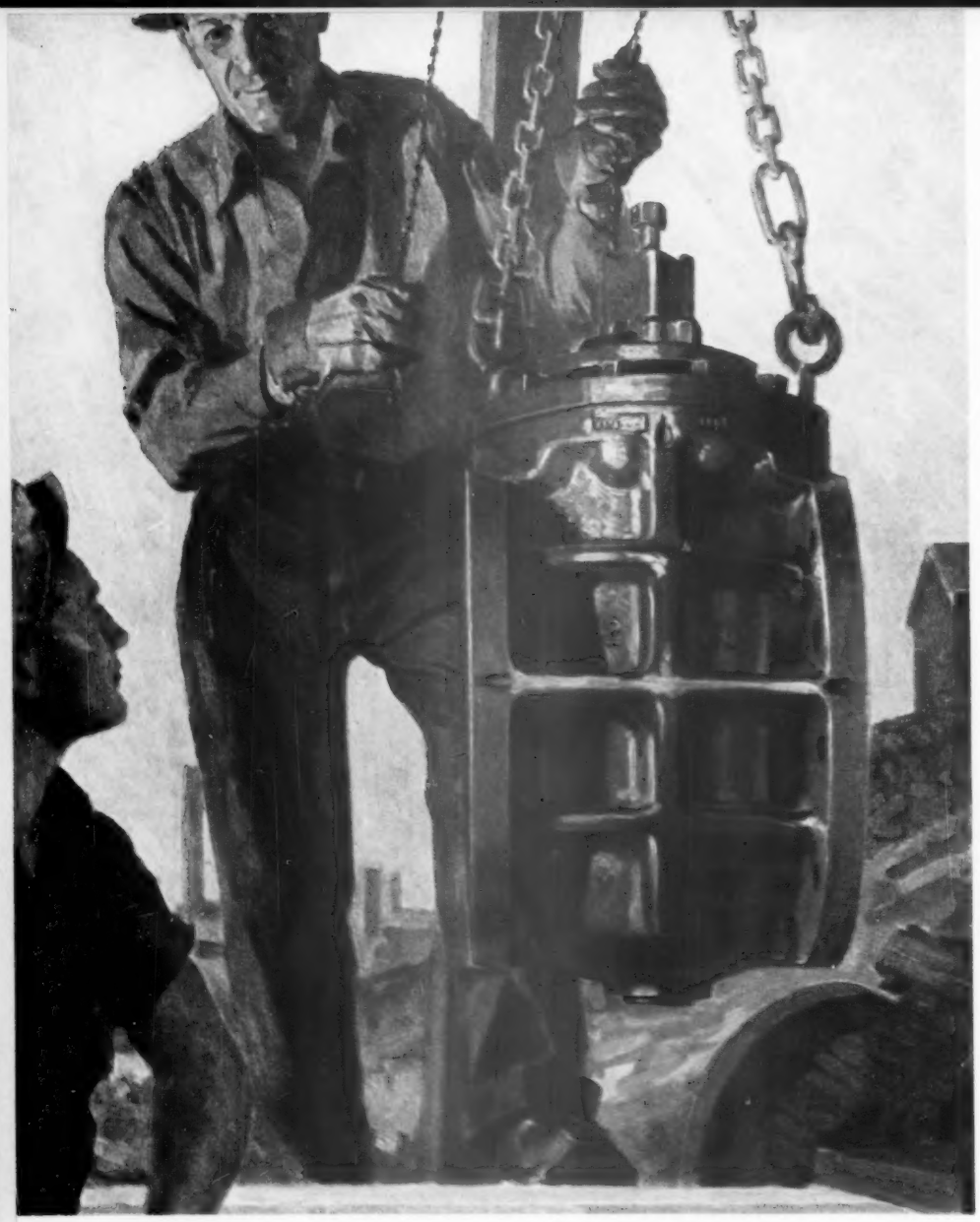
FIG. 3 NORMAL WINTER FIRM GAS USE PER CUSTOMER BY YEARS – AREA B. 1000 BTU. BASIS.

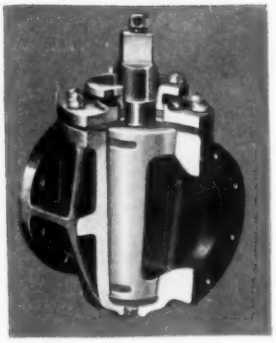
THERE IS A DIFFERENCE IN VALVING

KEEP UPKEEP DOWN with NORDSTROM VALVES

FACE-TO-FACE GATE VALVE DIMENSIONS IN ALL PRESSURES

EMCO-NORDSTROM TYPE





Replace with EMCO-NORDSTROM VALVES

You don't have to change your piping

Simply unbolt your old "trouble-giving" gate valves and slip EMCO-Nordstroms in their place. Cinch up on the bolts and there you have the most modern valve installation. No piecing, no welding. The face-to-face dimensions are the same as for gate valves. There's no overhead yoke, no stuffing box, no grooves to clog and corrode. You have an installation that spells service for years to come. EMCO-Nordstroms have become the popular replacement valves in hundreds of plants. They are easiest to install and give you leak-proof control, regardless of how frequently or infrequently they are operated. Ask for Bulletin.

Nordstroms keep upkeep down

These valves now made for all pressures

EMCO-Nordstrom Valves for replacement of gate valves are available for high pressure service as well as for the lowest pressures. So bear this in mind when you place your next valve order. The larger sizes are gear-operated. If you need to guard certain lines and make them tamper-proof, these valves can be equipped with locking devices. EMCO-Nordstrom Valves are competitive in price to gate valves.

Nordstrom LUBRICATED VALVES

Sealdport Lubrication

MERCO NORDSTROM VALVE COMPANY – *A Subsidiary of Pittsburgh Equitable Meter Company*

WORLD'S LARGEST MANUFACTURERS OF LUBRICATED PLUG VALVES; GASOLINE, OIL & GREASE METERS

Main Offices: 400 Lexington Ave., Pittsburgh, Penna.

BRANCHES: New York City, Buffalo, Philadelphia, Columbia, Memphis, Chicago, Kansas City, Des Moines, Tulsa, Houston, Los Angeles, Oakland.

CANADIAN Licensees: Peacock Bros., Ltd., Montreal. • *EUROPEAN Licensees:* Audley Engineering Co., Ltd., Newport, Shropshire, England

SOUTH AMERICAN Representative: The Armco International Corporation. *Main Office:* Middletown, Ohio

PRODUCTS: Nordstrom Lubricated Valves; Air, Curb and Meter Cocks • Nordstrom Valve Lubricants • EMCO Gas Meters • EMCO-McGaughy Integrators EMCO Regulators • Pittsburgh-National Meters for Gasoline, Grease, Oil, Water and other Liquids • Raybould Couplings • Stupakoff Bottom Hole Gauges

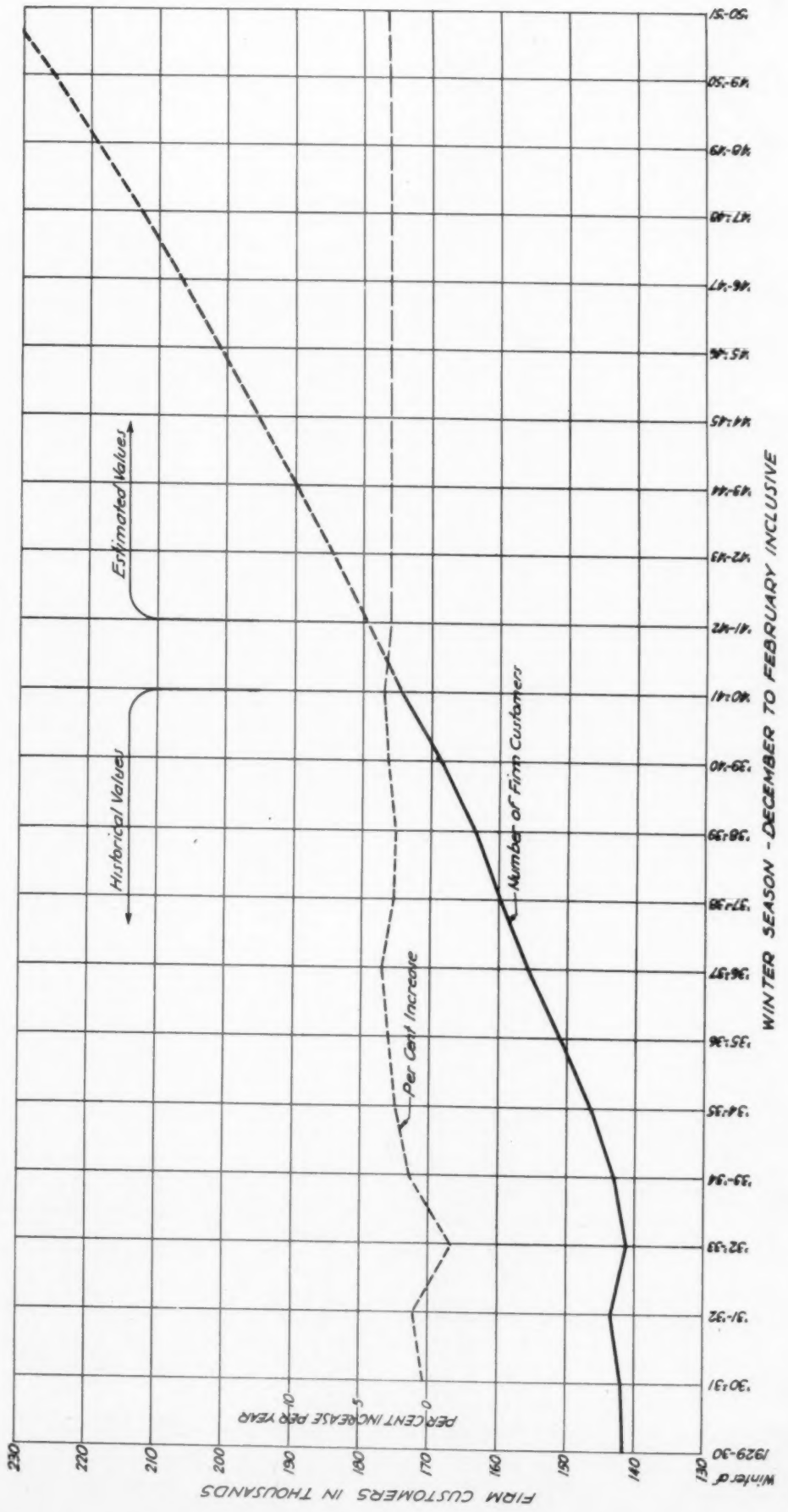


FIG. 4. NUMBER OF WINTER FIRM CUSTOMERS BY YEARS - AREA B.

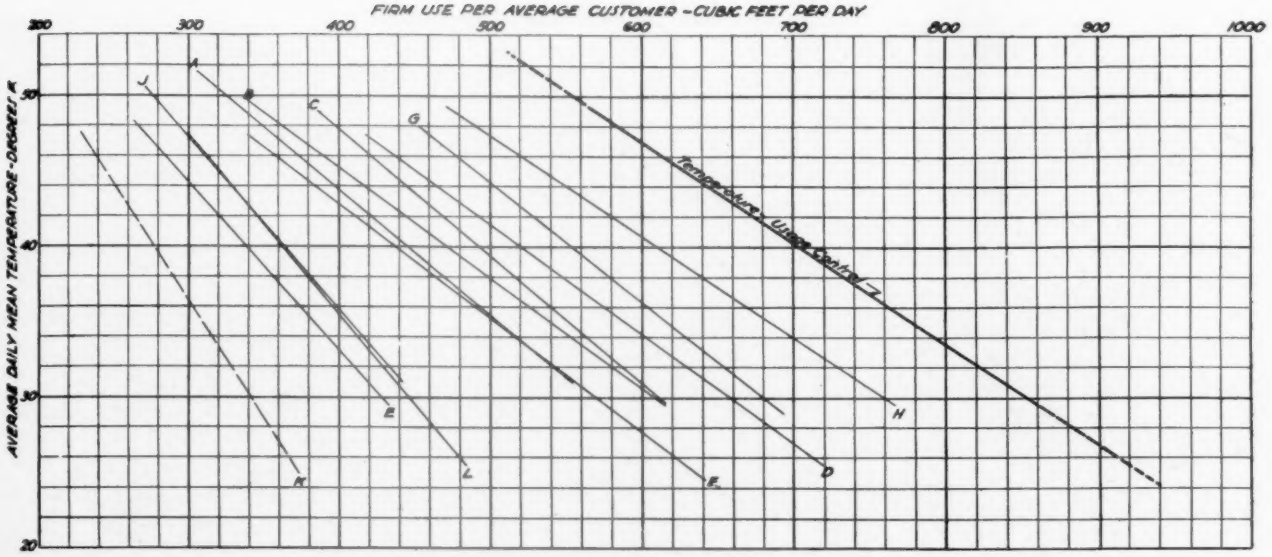


FIG. 5. CURRENT TEMPERATURE - USAGE LINES FOR ALL AREAS AND THEIR RELATION TO THE CONTROL, SHOWING BEHAVIOR BELOW WINTER NORMALS - 1000 BTU. BASIS.

customer usage in the Firm group. Certain areas may contain a few Firm customers whose load is so large as to distort the general average. Present defense preparations have created several loads of this type. Loads such as these are best isolated from the total and handled as separate units, otherwise a comparison between areas would be pointless.

Correlating Daily Data From Past Records

The next step is to determine the behavior of load with temperatures below the winter normal. Here data from one or more isolated groups of days must be used, there is no other choice. These days are selected by reason of their low mean temperatures and not because of their large sendouts, for the specific problem is to evaluate customer usage under conditions of low temperature. Cold days generally occur concurrently in small groups. Although the use of only one or two days might permit the correlation of data at somewhat lower temperature levels, it has been found that the diversity obtained by using a group of from four to ten days is to be preferred. For each day investigated, the total sendout in the area must be carefully altered and adjusted in order to reduce it to a strictly Firm sales basis. A detailed description of the procedure appears under Section 1 in the appendix. Firm sales for each of the several cold days are determined by this method; dividing these amounts by the number of Firm customers produces figures of the daily use per customer at 1000 Btu. The arithmetical average of these figures, together with an average of the corresponding mean daily temperatures, provides values comparable to those determined from monthly records.

The results of plotting these data are shown on Fig. 1. A straight line is drawn through two points, one being the average of the group of selected cold days, the other being the Normal Use per Customer per day previously determined. The point at which its extension intersects a line representing the basic minimum temperature for the area will indicate the Winter Peak Use per Customer per day. It will be observed that slight errors in the control points may cause magnified errors in peak day use. The reader will appreciate the reason for having exercised considerable care in determining the usage for normal winter temperatures; reliability of at least one of the control points is reassuring. It should be mentioned that a single straight line through both monthly and daily data has been found impractical. Over the full temperature range, a noticeable change of slope in one direction or another is indicated in some areas. A true record of normal winter growth would be sacrificed by drawing a single line through all data. In this work, for convenience, the point of inflection is assumed to occur on the normal temperature datum.

It will be of interest to observe the results obtained for the different areas in the territory. The Peak Winter-Day and the Normal Winter-Day Use per Customer are shown for each in Table 2 as is the average annual growth of the latter for the past five years. In Fig. 5 are shown, for each area, the sloping lines representing the Use per Customer per degree drop below Normal for the 1940-41 Winter. The marked difference in these variables in the eleven areas bears out the statements earlier made. The line of area K is included although the area differs from the others in that it was just recently changed over to natural gas.

TABLE 2

1940-41 Winter

	Use per Customer		
Area	*Peak Winter-Day*	*Normal Winter-Day*	*Average Annual Growth*
A	554	306	8.1%
B	614	340	8.6
C	614	386	7.0
D	719	418	6.7
E	435	263	10.2
F	641	340	7.0
G	700	453	7.1
H	768	470	2.0
J	442	272	10.1
K	374	229	26.0
L	483	300	6.9
M (Control)	860	565	3.5

Part 2 of this paper will appear in the October issue of the Journal.

The Government Says

FUEL AND HEALTH MUST BE CONSERVED

The War Emergency Requires It!

THE MONMOUTH HUMIDITY CONDITIONER:

CONSERVES FUEL. The net reduction in gas consumption for heating will be 4½ to 6% when humidification is added, with further savings obtainable. (Complete data on request.)

CONSERVES PROPERTY by eliminating dry air deterioration of the interior and furnishings of homes.

REDUCES DUST formation by reducing deterioration. Eliminates static electricity which reduces dust flotation. Bacteria are transported on dust particles.

CONSERVES HEALTH. Air must have oxygen *and water vapor* to be healthful. Humidification greatly reduces the number of colds, makes the few that are contracted mild, greatly facilitates quick recovery. Many serious diseases get their start from a cold.

The Government, through press and radio, will make the public increasingly conservation minded. This enables you to successfully sell gas humidification and start this new and attractive load. *Write now for complete information.*

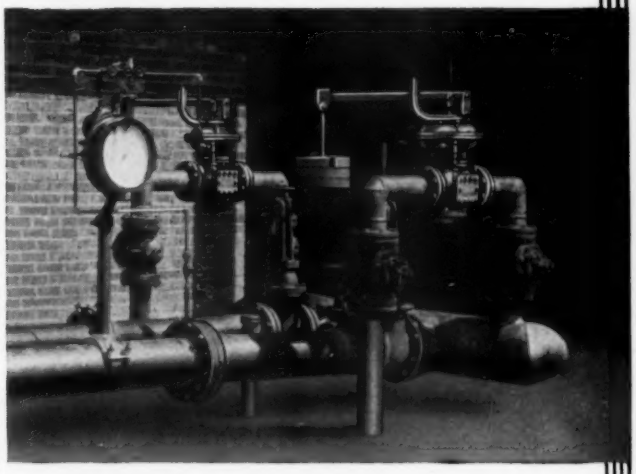
MONMOUTH PRODUCTS COMPANY

1939 East 61st St. — Cleveland, Ohio

MONMOUTH

The Greatest Name in Humidification

GAS MEETS THE Challenge!



In Industry, as well as in every other phase of America's struggle, to keep America safe for Americans, gas is playing a leading role. Regardless of whether it is an unusual requirement of accurate control in heat treating or some other industrial need, REYNOLDS has the answer to Gas Control Requirements.

REYNOLDS offers greater Capacity—Increased Range—Quicker Response—all features of REYNOLDS Gas Regulators for Industrial Control. They assure smooth, constant outlet pressure and volume. Manufactured in single or double valve construction, REYNOLDS Industrial Regulators are proved by performance in factory tests and on installations throughout the world.

REYNOLDS Cooperation in solving Gas Control Problems is always available. Write.

BRANCH OFFICES

423 Dwight Building
Kansas City, Missouri

2nd Unit,
Santa Fe Building
Dallas, Texas

REPRESENTATIVES

Eastern Appliance Company
Boston, Massachusetts

Wm. A. Ehlers
No. 268 Park Street
Upper Montclair, N. J.

RECOGNIZED GAS CONTROL SINCE 1892

REYNOLDS GAS REGULATOR CO.

ANDERSON, INDIANA, U. S. A.

440 Installations In 24 Countries

prove the ability of Glover-West carbonizing plants to produce gas at low cost and also make a highly reactive coke ideal for the domestic market. The tar has low water content and viscosity excellent for road material.

Write for complete details.

WEST GAS IMPROVEMENT CO.

424 MADISON AVENUE NEW YORK, N. Y.

More than 65 years of dependable service to the gas industry.

Fulton Cut-Out-Latch Regulator

It Stops the Flow of Gas If Pressure falls too low

ON a low pressure burner or furnace, the Fulton Cut-Out-Latch Regulator stops the flow of gas if pressure falls below the desired minimum. Whenever that happens, the cut-out latch will operate automatically to bring the valve to its seat and lock it there. Flow will not resume until the operator goes to the valve and opens it by hand. This eliminates completely the hazard for which the regulator is designed. Approved by insurance companies. Write for Bulletin No. 2987.

The CHAPLIN-FULTON MFG. CO.

38 PENN AVENUE PITTSBURGH, PA.

All sizes up to 3,400 cu. ft. capacity

Meters
Diaphragms
Repairs
Provers
Pumps
Calorimeters
Wet Meters
Gauges
Apparatus

METER REPAIR PARTS

FOR

ALL MAKES — ALL SIZES OF METERS

LARGEST GAS COMPANIES NOW USING OUR PARTS

SEND FOR OUR CIRCULAR ON METER REPAIR PARTS

SAMPLES AND PRICES GLADLY SENT

— o —

LAMBERT METER CO.

PLAINFIELD, NEW JERSEY

CRUSE-KEMPER COMPANY

STEEL PLATE CONSTRUCTION

AMBLER, PA.

GAS HOLDERS

HOLDER INSPECTION

RIVETED OR WELDED FABRICATION & ERECTION

TANKS, BINS, FLUES PURIFIERS, WELDINGS

GAS PLANT EQUIPMENT

UGI REFINERY GAS REFORMING PROCESS
UGI NATURAL GAS REFORMING PROCESS
UGI HEAVY OIL PROCESS

GAS DISTRIBUTION

PIPE LINE CONSTRUCTION

THE U.G.I. CONTRACTING COMPANY

A DIVISION OF

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK PHILADELPHIA CHICAGO

MAXIMUM RETURN TO CLIENTS PER DOLLAR EXPENDED

Shop Methods For Improving Gasoline Economy

By
Errol J. Gay
Ethyl Gasoline Corporation,
Detroit, Mich.

ANY DISCUSSION of methods for improving and maintaining gasoline economy of a fleet of vehicles becomes a story of detailed effort, constant application of the basic principles of good carburetor maintenance and last, but not least, trained personnel. I realize that there are many who may have small fleets with limited maintenance equipment and personnel. For that reason I would like to say that there is nothing particularly difficult in carburetor maintenance once the necessary routine of inspection and repair is established.

In all vehicles, regardless of service, the largest single item of operating costs is the money paid out for fuel. Usually this is somewhere near 25% of total operating cost. Please remember, the carburetor spends that money for you, and therefore, is deserving of attention and care.

Each man responsible for vehicle maintenance should evaluate the amount of fuel used per year. For example, Fleet A uses 25,000 gallons of gasoline per year. A five per cent savings in fuel would amount to 1,250 gallons per year. At 15c per gallon this is only $187.50. Following this further we have Fleet B using 200,000 gallons per year. Here a five per cent savings will amount to 10,000 gallons. At 15c per gallon this savings will amount to $1,500.00.

It is quite easy to see that the man running Fleet A cannot afford many added hours of labor or specialized test equipment to save that $187.50. What he saves must be done during his normal maintenance procedure. However, Fleet B can spend $500.00 per year in extra man hours of labor, plus $200.00 for tools, and still show $800.00 savings. It is up to you to decide where you fit in this picture just presented.

In most public utility buying the selection of carburetor type and make is entirely out of the hands of maintenance personnel. For that reason he cannot specialize on one brand of carburetor, and must, therefore, become reasonably well acquainted with the popular makes of carburetors that will be found on his vehicles.

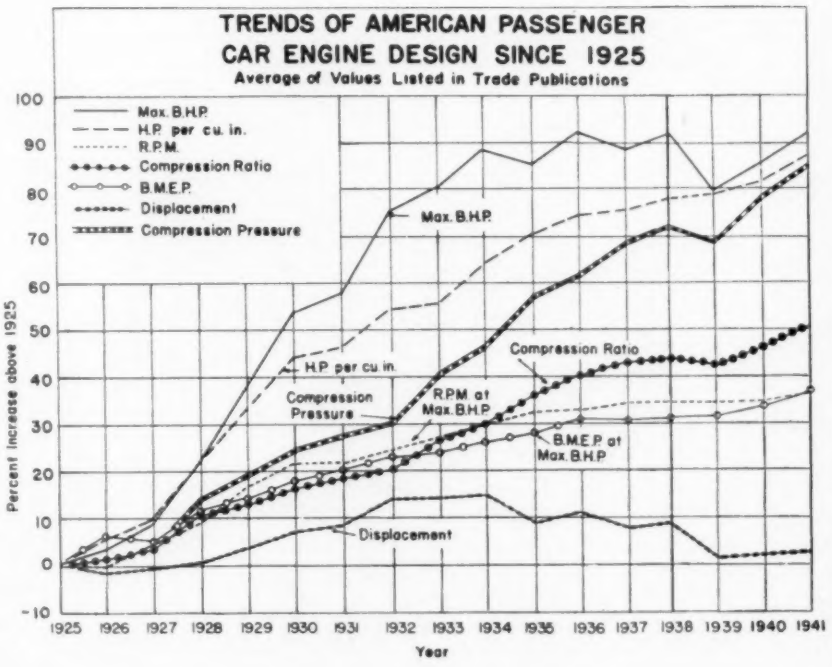


Figure 1.

Before getting into shop methods of carburetor care and inspection, I want to bring to your attention two items which should precede any discussion of carburetor care and improved gasoline mileage. These are:

A. General maintenance of the vehicle. Any attempt at mileage improvement will fall by the wayside if general vehicle maintenance is poor. Dragging brakes, front wheel misalignment, low tire pressures and missing of weak cylinders will all adversely affect gasoline economy.

B. Selection of fuel to be used. The vehicle manufacturer, both passenger car and truck or bus, is constantly improving his engine efficiency. Figure No. 1 shows the trend of design of passenger car engines from 1925 through to this year's 1941 car. Note that horsepower per cubic inch has increased 88% while the cubic displacement of the engine has changed but 2%. Much of this increase was brought about by the 51% increase in compression ratios. In Figure No. 2 the trend of design of truck and bus engines is shown. This extends from 1935 up to the 1941 models. Here again horsepower per cubic inch has increased 16% and compression ratio 18%, while cubic displacement has decreased 1.5%.

The vehicle manufacturer expects you to use a reasonably good fuel in the equipment they build. The type and quality of fuel you buy may have a bearing on fuel economy. The competitive situation at work today generally assures you a good grade of fuel. Therefore, so long as your

Paper read before American Gas Association, Technical Section, The First Annual Conference on the Operation of Public Utility Motor Vehicles, Pittsburgh, Pa., April 21-22, 1941.

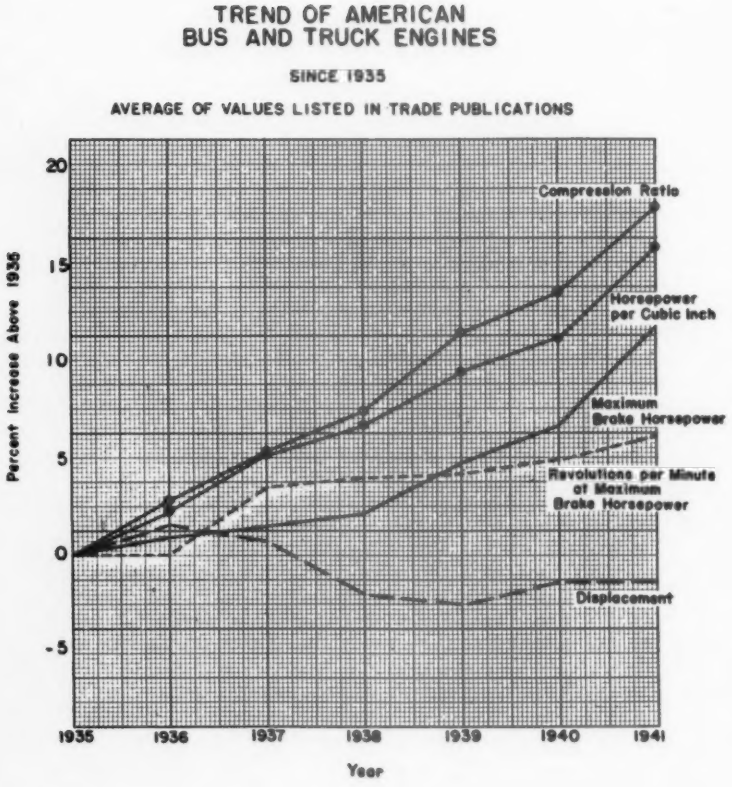


Figure 2.

source of supply is dependable, the fuel you buy should be of reasonably good quality.

Shop Methods For Improving Gasoline Economy

We are now at the point where we can begin to discuss shop methods for improving gasoline economy. Smaller fleets, again based on the gallons of gasoline they use per year, will probably be better served by having their carburetors rebuilt at well equipped shops who specialize in this type of work.

The larger shop should train or employ a man to devote the necessary time required to keep carburetors and ignition systems in shape. This same larger shop can afford to build a carburetor test stand which will make easier the rebuilding and inspection of carburetors. Figure No. 3 shows a line drawing of a practical carburetor test stand. This can be made up in your own shop. It consists of a tray with a raised ledge. This tray should be dished towards the center with a drain located at the center. The drain should flow back into the supply tank underneath the tray. Over the tray should be a mounting bracket in which various types of carburetors can be fastened. Fuel pressures to the carburetor can be supplied by an electric pump or a cam driven AC pump. In any case, sufficient pressure should be available so as to equal or slightly exceed the working pressure available on the vehicle. A pressure gauge should be installed where it is easily visible to the man working on the test stand so that he may ascertain the fuel pressures being delivered to the float chamber.

If carburetors are equipped with vacuum operated accelerating jets or power jets, it may also be desirable to provide a vacuum pump so that these devices can be checked while the carburetor is on the test stand. This test stand is a usable, valuable piece of equipment and has paid dividends to many operators who have constructed one for their use.

In any fleet, whether large or small, it is desirable to have equipment for testing fuel pump pressures and capacity. The cost of a fuel pump test gauge is small so that the size of a fleet is not a limiting factor on expenditure for the gauge. We have always felt that any adjustment of idle air fuel ratio or carburetor inspection should start with a check of fuel pump pressures. A tee can be provided in the line between the fuel pump and carburetor. If this tee is provided with a ⅛" pipe plug, it is only a matter of seconds to attach a fuel pump pressure gauge. If pump pressures are down, there is no need to check carburetor idle or carburetor fuel levels until the fuel pump has been repaired or replaced. If any of you have trouble with vapor lock, this simple item of checking fuel pump pressures periodically, and particularly in the spring of the year, may prove a means of avoiding a large percentage of your vapor lock complaints. City bus operators have learned this lesson and now most of them pay close attention to fuel pump pressures.

The fuel level in the carburetor bowl is a very important item in the maintenance of good fuel economy and correct idle air fuel ratios. The constant starting and stopping of commercial vehicles tends in time to wear float level fittings so that we may find many carburetors with fuel levels much higher than factory recommendations.

A simple means of determining float levels while carburetors are still on the vehicle is to provide an inspection hole in the fuel bowl of the carburetor. This hole is usually drilled with the bottom of the thread even with the required level of the fuel in the carburetor. In small type carburetors it is best to use an 8-32 round head screw with a small gasket underneath the head. In large carburetors a ⅛" brass pipe plug will work very nicely. In either case, be sure that the plug or the screw does not project far enough into the bowl so as to interfere with float action. With this plug in place, the mechanic merely has to remove the plug to see whether the level is high or low. If the level is high, fuel will leak out of the carburetor inspection hole. If he has checked his fuel pump and knows that its pressure and flow delivery is within correct limits, then he has no alternative but to remove the carburetor and readjust the float level. I have always maintained that inspection jobs made as simple as possible will assure their being done a big percentage of the time. This fuel level inspection device is simple and pays dividends. If inspection holes are not provided, then your tune-up mechanic should be given fuel level testers such as provided by practically all of the carburetor manufacturers.

Not enough attention is paid to carburetor idle air fuel ratios. Vehicles used in city service will have the idle jet providing fuel fairly well up the line of vehicle speed. If an idle ratio is set rich, then your miles per gallon will definitely be on the

low side. All commercial vehicles, whether they be passenger cars or trucks and buses, should have the idle set as lean as possible and still maintain a satisfactory non-stalling idle. The private owner generally likes to have a smooth running engine at idle. However, some roughness or unevenness in a commercial vehicle should be disregarded providing it helps the economy picture.

There is no better way to determine carburetor idle air fuel ratios than to use a dependable exhaust gas analyzer. Here again certain small fleets may feel that the outlay of money for an exhaust gas analyzer is not justified. This, of course, is in line with my first comments in this paper. If an analyzer is available, it seems desirable to keep the air fuel ratio set as close to 13 to 1 as is possible and still maintain a non-stalling idle. Also, engine speed should be held to a reasonably low level.

If no analyzer is available, then the vacuum gauge serves as a very good substitute. Best idle is usually considered to be that which gives maximum vacuum gauge reading. In many engines, this may set the idle somewhat richer than best economy. Therefore, I would suggest that when using a vacuum gauge, the idle should be set somewhat leaner than maximum vacuum reading. Some interesting sidelights on this are tests which we have run at our Detroit Laboratory. On a certain large engine, we obtained 1.1 gallons per hour with an air fuel ratio of 11.5 to 1. When the idle was readjusted to 12.5 to 1, this consumption dropped to 0.9 gallons per hour. On a small passenger car type engine, there was a variation between three gallons per hour for a lean carburetor idle setting and 2.5 gallons per hour for a rich carburetor idle setting. Please keep in mind that it is a mistake to hide other engine deficiencies such as improper mechanical condition or ignition condition by setting an engine to use a rich idle.

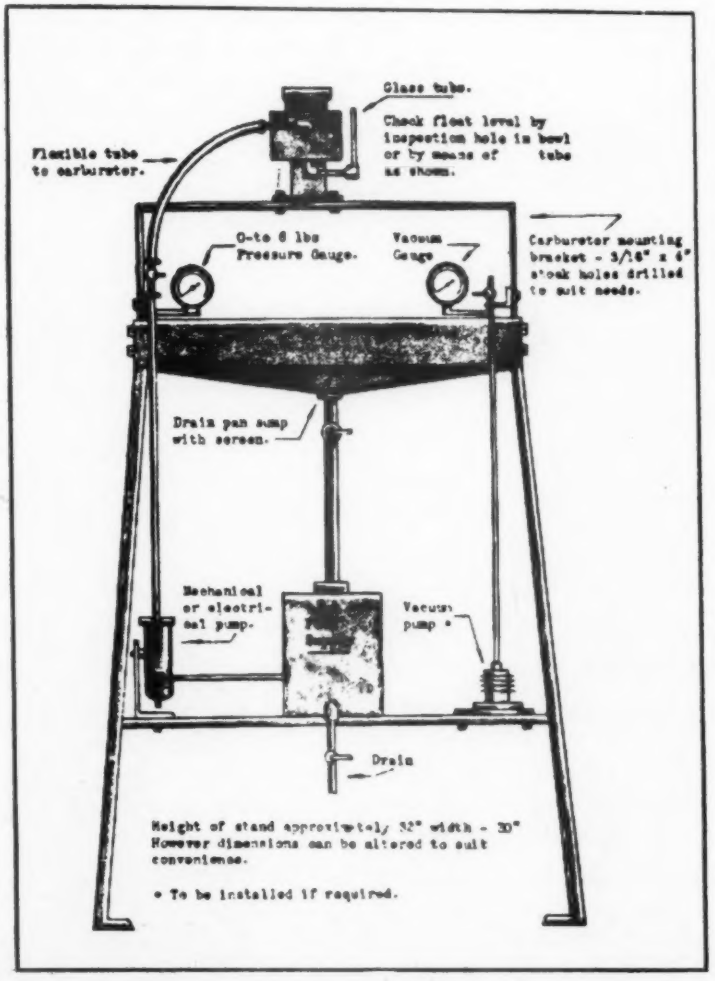

Glass tube.
Check float level by inspection hole in bowl or by means of tube as shown.
Flexible tube to carburetor.
0-to 6 lbs Pressure Gauge.
Vacuum Gauge
Carburetor mounting bracket - 3/16" x 4" stock holes drilled to suit needs.
Drain pan sump with screen.
Mechanical or electrical pump.
Vacuum pump *
Drain
Height of stand approximately 32" width - 30" However dimensions can be altered to suit convenience.
* To be installed if required.

Figure 3.

Fuel Line Temperatures

When preparing this paper, I debated the question of bringing to your attention the effect that fuel line temperatures can have on your overall fuel economy during the summer. Most passenger cars are so designed today that vapor lock does not seem to impose any great problem. This is also true to a great extent with commercial vehicles. However, the fact that vapor lock does not trouble you may be no indication that fuel line temperatures are low. Your vapor lock problems have been helped by more efficient fuel pumps operating at higher pressures and more careful control of low end volatility and vapor pressure by the refiner. High fuel line temperatures may, however, cause large volumes of vapor to form in the fuel line before it reaches the carburetor. When the gasoline escapes past the fuel needle and seat, these vapors immediately expand. If the carburetor is vented, the vapors are lost to the outside air. If the carburetor is of the balanced type, these vapors are drawn into the intake manifold and only tend to enrich the normal operating air fuel ratios. Many cases of stalling in hot weather are attributable to this very cause. Technicians of some of the large refiners have told me that it is possible to lose as much as 20% of your fuel mileage in the summer due to this cause.

Perhaps there are some of you here who should look over your present installations to see if fuel lines can be better protected from heat. By protection I do not mean enclosing the gasoline line with loom. This is only temporary protection and once it heats through it also prevents the line from cooling. It is better to protect the line from hot surfaces with a shield which will allow air to circulate. Fuel pumps can also be made to run cooler by providing scoops which will throw air up on to the pump.

One rather serious problem is the attempt of those working on fleet carburetors to redesign or recalibrate the carburetor to a setting which meets their own personal ideas of what a carburetor should do. It is true that manufacturers have often placed engines in service with a carburetor calibration not suitable for the particular type of service in which it is being used. However, the average carburetor man has neither the experience nor the equipment to make these changes and this work should be done in conjunction with someone who has a larger back-

ground of experience and knowledge.

In looking over some recent discussions on carburetors, I felt that not sufficient emphasis was placed on the maintenance of carburetor chokes. Many of the passenger cars and trucks which you public utility men use are equipped with automatic chokes. These need a certain amount of maintenance. Certainly it isn't difficult to inspect them once an engine is thoroughly warmed up so as to be sure that the choke has fully opened and is not causing the carburetor to run rich. Here again if the shop is small, it is perhaps best to have any repair of automatic chokes taken care of by an outside firm. In larger shops the man who takes care of the carburetors can also service the automatic chokes. If manually operating chokes are provided, there is no excuse for these devices not working properly. It is purely a matter of inspection to see that the choke is fully open when the choke button is in the open position.

The ignition system must not be neglected if best fuel economy is desired. This means periodic inspection and maintenance of spark plugs. Many present day cars are recommending wider spark plug gaps and it is generally true that cars operating entirely in city service will show somewhat better mileage with a wider spark plug gap. There is no need to go into the mechanics of checking distributors, coils and condensers since there is plenty of equipment on the market capable of doing a reasonably good job. The fleet operator will have to decide for himself how much of this equipment the size of his fleet justifies.

Ignition Timing

The ignition timing can play an important part in gasoline mileage. Here again there should be timing marks provided which are easily accessible, as was the fuel level inspection plug in the carburetor. I am a great believer in making it as easy as possible for the mechanic to set ignition timing. If present timing marks are inaccessible, then provision should be made for a mark which can be seen easily.

Just this past summer we had an occasion to assist one large city bus fleet in determining causes as to why their gasoline mileage had been dropping off. A number of vehicles were thoroughly checked on a chassis dynamometer. We were quite pleased to see that the carburetor maintenance procedure which we had established some few years before seemed to be functioning very well. Of all the carburetors we checked there was only one which had any real mechanical difficulty. There were one or two of the others which could have had better idle air fuel ratio setting. Some 30% of the units had the wrong ignition timing. Fortunately, only one of this group had the timing set too far advanced. However, the others were in retard of the correct mark. In any commercial vehicle, the timing should be set as far towards maximum power as knocking conditions will permit. This, of course, will be somewhat dependent upon the fuel. I do not feel that light knock or trace knock in a commercial vehicle is an objection and if this provides better economy, it is well worth tolerating.

Some fleets have had success in improving fuel economy by the use of engine speed governors which prevented the driver from speeding the engine in first or second gear and would force him to get into high gear as soon as possible. I believe that a good substitute for engine speed governors is a program of driver training. Much can be accomplished in the way of improved fuel economy by seeing that drivers handle their vehicles properly. The problem of driver training is certainly a topic in itself and I shall do nothing more than mention it in presenting my paper.

In closing I might cite a personal experience to show that care of the vehicle is a factor in the maintenance of gasoline economy to original factory standards or even improving over factory standards. My wife drives a popular model of six-cylinder automobile. At the time it was purchased, slightly over four years ago, she drove to Florida and averaged just slightly over eighteen miles to the gallon. In the past few weeks, she again drove to Florida and on this trip averaged fifteen miles to the gallon. This is a loss of approximately 16% in fuel mileage. In commercial service this would be serious. The average passenger owner would not pay much attention. On a round trip to Florida, totalling some 4,000 miles, this loss amounts to forty-three gallons of gasoline or approximately $8.60 which would pay for a carburetor overhaul.

I happen to know most of the cause of this loss in mileage. Some time after she left Detroit, she developed one weak cylinder which means that she has been driving with the throttle further open than necessary in order to maintain sufficient power for the speeds at which she wished to cruise. This of course, used more gasoline. The carburetor needs attention even though it seems to perform quite satisfactorily and I am sure that a carburetor overhaul would probably bring back 6% to 8% of the loss. I wonder how many vehicles there are in your public utility fleets which fit into this same category.

This question of maintaining and improving fuel economy is one of attention to detail and careful inspection. It isn't a difficult problem if it is looked after at periodic intervals and if there is someone in your maintenance personnel who understands the situation.

SUPERIOR GAS METERS

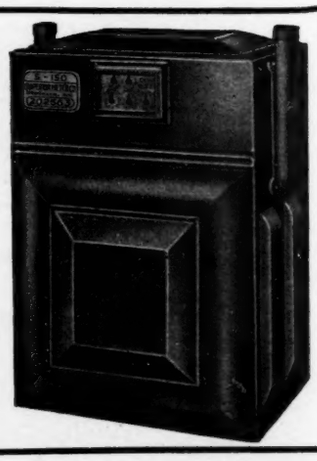
For Sound Values and Continuous Operating Economy

Meters for Domestic and Industrial Use. All Sizes 5B to 60C.
Wet Test and Demonstration Meters — Diaphragms —
Service Cleaners — Provers — Meter Repairs

Write for details and quotations

SUPERIOR METER COMPANY, INC.

167 41st Street ***Brooklyn, N. Y.***



The Republic Conversion Water Heater

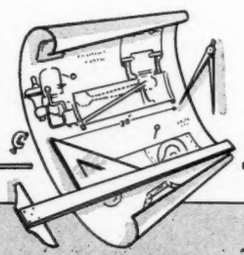
The Republic Conversion Burner

The Republic Humidifier

The Republic Exhauster

Each product unique—

Nothing else like it



AUTOGAS Company

REPUBLIC GAS APPLIANCES
2258 DIVERSEY AVE CHICAGO ILL

Industrial Gas Engineering

By

Raymond F. Mann

Twenty-one chapters of practical information for Industrial Gas Engineers and Salesmen.

It describes principles of operation and much of the equipment used in a variety of industries. It gives examples of calculations, also operating characteristics and data.

Appearing originally as a series of articles in AMERICAN GAS JOURNAL, the author, with 18 years practical experience in the industrial uses of gas presents the series in book form.

100 Pages 8½ x 11. Strong flexible cover.

Every industrial engineer or salesman will need his personal copy. Order today the number of copies you require as the edition is limited.

Only $1.50 a Copy

TABLE OF CONTENTS

The Tools of the Industrial Gas Engineer 5
Industrial Gas Heating Calculations 11
Industrial Gas Burner Systems 17
The Choice of a Burner System 21
The Immersion Burner 25
Gas in the Foundry 31
The Baking of Cores 34
Galvanizing 38
The Heat Treatment of Metals 42
The Melting of Metals—Part I 47
The Melting of Metals—Part II 53
Gas-Designed Steam Boilers 58
Gas and the Bakery 62
The Direct Fired Air Heater 67
Use of Gas for Drying in Industrial Plants 72
Industrial Gas and the Competitive Angle—Part I 76
Industrial Gas and the Competitive Angle—Part II 80
Industrial Gas and the Competitive Angle—Part III 84
Industrial Gas and the Competitive Angle—Part IV 89
The Industrial Gas Engineer and Space Heating 93
Selling Industrial Gas 97
Combustion Characteristics of Typical Gases 100

American Gas Journal 53 Park Place, New York

News of the Gas Industry

New Transmission Line for Gulf Coast States

United Gas Pipe Line Company announces that construction of a 200-mile natural gas pipe line has been started to supply the increasing fuel requirements of industries and cities in Louisiana and along the Gulf Coast of Mississippi and Alabama to Pensacola, Florida.

The new line will run from the gas fields of southern Louisiana across Lake Pontchartrain to Mandeville, La., eastward to Gulfport, Miss., and thence to Mobile, Alabama. At Mandeville another line is being laid to Covington, Louisiana. It has been estimated that 56 per cent of the line's capacity of approximately 80 million cubic feet daily will be used by industries engaged in filling national defense contracts.

The crossing of Lake Pontchatrain will be the longest underwater natural gas pipe line in the world. A single line, 14 inches in diameter, will traverse the 25 miles of water from the southwestern bank to Mandeville on the northern shore. Construction on this section of the line will start the latter part of August.

The new line will tie-in to existing lines at several points and at Mobile will connect with the Pensacola lateral line constructed several years ago, but built large enough to handle sufficient gas for all the requirements of the growing Pensacola industries and the U. S. Naval Training station near that city.

United Gas Pipe Line Company's main transmission lines will, upon completion of the new project, encircle a large portion of the Gulf South. This part of the United system extends from the fields in lower Louisiana northward to Shreveport, Louisiana, and across to Monroe, Louisiana, and Jackson, Mississippi, southward to Mobile and Pensacola. The new line completes the loop by linking Mobile and intervening points with the Terrebonne parish gas wells, running from west to east. The lines are supplied from numerous gas fields which are tapped all around the big circle.

Jack Torbert Will Head A. G. A. Water Heater Committee

Jack Torbert, new business manager of The Wyandotte County Gas Company, has accepted the chairmanship of the water heater committee of the residential section of the American Gas Association. Mr. Torbert's committee work will start following the annual convention of the A.G.A. in Atlantic City in October. He will succeed Bernard A. Seiple, vice-president in charge of sales, Jersey Central Power and Light Company, Asbury Park, N. J.

Natural Gas for Michigan

The Michigan Public Service Commission has approved the petition of the Consumers Power Co., Jackson, Mich., to substitute natural gas from the Amarillo, Texas, and Hugoton, Kan., gas fields for the present manufactured gas and also approved a 15-year contract between the utility and the Panhandle Eastern Pipe Line Company for transportation of the gas to Michigan, as well as a schedule of natural gas rates which indicate an average of 21% reduction to domestic gas users and a 38% reduction in space heating costs. Sixty-six municipalities in Michigan will be served.

The first step in carrying out the program, which calls for the laying of a total of 435 miles of pipe, will be the letting of contracts for 45 miles of 8-in. pipe from the vicinity of Peoria to Galesburg, Ill.,. and 8 miles of 4-in. near Abingham, Ill., according to J. C. Reinbold, general superintendent.

The company will ask for bids on more than 146 miles of loops and 236 miles for a branch-line system in Michigan.

As a result of the expansion of Panhandle Eastern Pipe Line Co., by which it acquires the facilities of Michigan Gas Transmission Corp., a 236-mile branch line is planned which will have laterals serving Jackson, Marshall, Battle Creek, Kalamazoo, Flint, and the area beyond Saginaw. The part of line which goes to the Detroit area will run eastward south of Pontiac and terminate at Clawson, Mich. The line will connect with the Michigan Gas Transmission line at the point where it crosses the Ohio-Michigan state line. This branch-line system will include pipe in sizes of 12 in., 16 in., 20 in., and 24 in.

CONVENTION CALENDAR

September

8-10 *Mid-West Gas School and Conference,* Ames, Iowa.

10-12 *Pacific Coast Gas Assn.* Annual Convention, Del Monte, Calif., Hotel Del Monte.

October

6-10 *National Safety Congress and Exposition,* Chicago, Ill.

20-22 *American Gas Assn. 25th Annual Convention,* Atlantic City, N. J.

20-24 *Industrial Gas Exhibit* at National Metal Congress, Philadelphia, Pa.

1941 Chemical Exposition

Great new achievements in America's march toward economic independence will highlight the 18th Exposition of Chemical Industries, coming to Grand Central Palace, New York, December 1-6. The display will be the largest Chemical Exposition in twelve years.

Among the exhibitors will be a number of specialists in industrial development work, who will offer such completely integrated facilities as: acid plants, extraction plants, food industries equipment, paint making machinery, rayon equipment and the machinery for turning out various products in plastic materials, as well as the almost magical molding powders themselves.

Appliance Servicing

The Consolidated Edison System companies of New York recently called a meeting of manufacturers, distributors, and repairers of gas and electrical appliances at their offices to discuss a plan for the servicing and repairing of all gas and electrical appliances used on the company's lines. The plan is designed to decrease the demand for new appliances so as to release materials for national defense.

According to E. F. Jeffe, vice-president, the plan calls for the setting up of certified service and repair stations under standard supervised operation, prices and terms. It also includes financing to provide the timely repair of any appliance from an electric iron to a large refrigerator. Dealers now cooperating in the sales campaign sponsored by the company were invited to take part in the new activity as a means of replacing the income which is expected to be lost to them because of the lack of new appliances resulting from defense needs.

The plan will appeal to small distributors and manufacturers for the same reason.

McMurray Appointed Adv. Mgr. Washington Gas Light Co.

Herbert H. McMurray is now in charge of the Washington, D. C., Gas Light Company's advertising department, succeeding Wilmot R. Squier, recently deceased.

Mr. McMurray joined the company in September of 1930 and had been doing special promotion work for the past 18 months. With the firm, he has successively been a retail salesman, sales floor manager and promotional representative.

He is a native of Indiana, a graduate of DePauw University and National University, Washington. Before coming to Washington he taught at Berea College.

National Defense Exposition

September 20 to October 18 are the dates definitely decided upon for the Civilian National Defense Exposition which is to be staged in Grand Central Palace, New York. This is to be a comprehensive presentation of industrial and commercial activity on the Defense program. The organization developing the project is The Defense Exposition, Inc., a non-profit corporation. All profit above actual expenses will be divided between two beneficiaries—the United Service Organizations and the Office of Civilian Defense. Guiding the venture is a general advisory committee of more than forty distinguished citizens, of which George A. Sloan, Commissioner of Commerce for New York City is chairman. C. N. Nichols, executive director of the New York Convention Bureau of the Merchants Association of New York is executive assistant to the chairman, and Almon R. Shaffer is managing director.

It is planned to educate the public on the subject through interesting exhibits and graphic demonstrations of its specific part in the vital program and to offer opportunity to manufacturers, large and small, to show how they are cooperating. Inquiries regarding space may be addressed to headquarters, Grand Central Palace, New York.

A feature of the opening week will be a Defense Clinic endorsed by the OPM (Office of Production Management). Exhibits on the four floors of the Defense Exposition (nearly four acres in area) will place emphasis on the Civilian side of the problem; how citizens—men, women and children are being organized to cooperate with the Government authorities, city and state police and Army and Navy. Much new defense equipment now being turned out by numerous huge factories, and which the public has not yet seen, will be exhibited, thrilling military and naval displays of new mechanized armored equipment and aircraft, field guns, machine guns and modern implements of war. Some of the things the Army and Navy have to offer recruits and much else of timely interest will be presented. Sound films of air raids and combats that have taken place in England and on the Continent; how Defense works in time of emergency will be shown. Visitors will be able to learn how an anti-aircraft battery actually operates, as well as many other things. What to do in case of an air raid; how to handle incendiary bombs; how to apply first-aid emergency treatment. These are but a few of the vital things to be demonstrated in a great and moving exposition of America's vital problem.

"The purpose of the National Defense Clinic at this exposition," Robert T. Stevens, District Coordinator for the Defense Contract Service, OPM, declared, "is to focus national attention on the necessity of speeding production by bringing all available facilities into the defense program. Where their equipment and personnel are suitable, small manufacturers should be given an opportunity to do their part in defense production."

S.E.C. and Pension and Retirement Plans

The Securities and Exchange Commission has recently been interesting itself in the various types of employee welfare plans and has indicated that it is of the opinion that it may have jurisdiction over the operation of some of these plans. It is making a study of the retirement and pension plans, disability or sickness or accident relief plans, savings plans, employees' loan or credit plans, and other forms of welfare plans for the purpose of determining what, if any, jurisdiction the Commission has over their operations.

According to statements that have been made, the Commission appears to have arrived thus far at the following tentative opinions:

(1) Retirement or pension plans which involve no contribution from employees are probably exempt from the jurisdiction of the Securities and Exchange Commission.

(2) Retirement or pension plans of municipally owned and operated railways are exempt under the provisions of Section 3(a) (2) of the Securities Act which specifically exempts securities issued or guaranteed by governmental agencies.

(3) Retirement or pension plans involving contributions of both employer and employees that pay the premium on insurance policies issued by a legal reserve life insurance company are exempt by the provisions of Section 3(a) (8) which specifically exempts any insurance policy or annuity contract issued by an insurance corporation subject to the supervision of state or federal agencies.

The Commission has definitely stated, however, that a contributory plan in which employees and employers both contribute to a fund to be used for the promotion and operation of any of the several types of welfare plans, where such fund is administered by either the employer or representatives of the employees or representatives of both, is presently considered to be subject to the Commission's jurisdiction. This means in effect that the Commission considers that plans conducted in this way may constitute the issuance of securities and, may therefore, require that such plans be registered with the Commission and comply with the regulations of the Commission provided therefor, including the rendering of reports regarding them.

New Staff and Sales Appointments to Minneapolis-Honeywell

H. W. Sweatt, President of the Minneapolis-Honeywell Regulator Company has just announced the addition to the executive staff of Mr. Alfred M. Wilson as Assistant to the President.

Mr. Wilson has had a broad background of practical manufacturing and executive experience. After his graduation from Yale University he worked in the factory of the Gillette Razor Company of Boston and during his employment there he completed a course in engineering at the Massachusetts Institute of Technology.

After leaving Gillette he was associated with the American International Company in New York and for the past several years has been with the J. & W. Seligman & Company.

C. B. Sweatt also announced the appointment of W. H. Reichow, Manager of the Kansas City Branch Office.

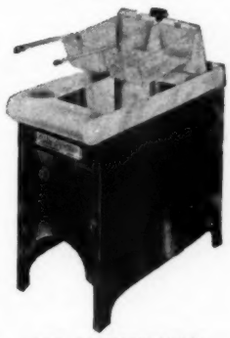
Mr. Reichow joined the M-H organization in 1934 through the Brown Instrument training school. His first assignment was in the Sales Department in Kansas City and subsequently he was transferred to Chicago and then to Davenport as District Representative.

Mr. Reichow takes the place of Mr. D. F. Banner who has been transferred to the Home Office Sales Department in the Gas Division.

GOLDEN BROWN MASTERFRYER

COMPLETE COMMERCIAL LINE OF DEEP FAT FRYERS

• LONG • LIFE • POTS •



• HIGHER • EFFICIENCY

FOR RESTAURANTS, HOTELS, INSTITUTIONS AND BAKERIES

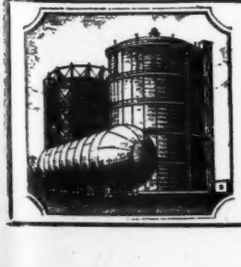
A CREDIT TO THE GAS INDUSTRY

MANUFACTURED BY

GOLDEN BROWN APPLIANCE MFG. CO.

LYNN MASS.

PROMPT DELIVERIES



STACEY BROTHERS

Gas Construction Co., Inc.

"STACEY-KLONNE" & TELESCOPIC GAS HOLDERS "STACEY BULLET" PRESSURE HOLDERS

PURIFIERS AND STEEL PLATE CONSTRUCTION

Executive Offices: Cincinnati, Ohio

Eastern Office: 21 West St., N. Y. C.

A Hard Job Well Done by Brooklyn Union Gas Company

During a recent severe rainstorm a section of a street crossing in Brooklyn, N. Y., caved in, probably as the result of an undermining of the shoring being used in subway construction.

Portions of the heavy plank decking collapsed, producing a large crater. Water mains and sewers broke, flooding the crater with water. Three gas mains broke, permitting gas to escape at the rate of 1,000,000 cubic feet an hour.

Telephone and power lines collapsed, adding new hazards. In the midst of all this disorder, the gas caught fire.

The gas poured from a 24-inch high-pressure main, from a 20-inch by-pass connected to the 24-inch main, from both ends of a 12-inch low-pressure main, and from both ends of a 6-inch low pressure main.

The resulting emergency probably was the equal of any which Londoners have been called upon to face in recent months. It demanded the immediate and efficient mobilizing of the forces of all utilities, including Brooklyn Union.

The first task of this company's forces was to stop the flow of gas. This was done by closing the nearest valves on the high-pressure mains and by bagging and capping the low-pressure mains. Before the bagging and capping operations could be performed, excavations had to be dug at points some distance from the crater, because of the intense heat generated by the burning gas.

The speed with which this job was done amazed even those who know, from past experience, that gas men "always come through." Despite the enormous difficulties—which were complicated by the fact that telephone service was disrupted for several blocks around—the flow of gas was quickly stopped, except for a small amount which continued to leak past a valve in the 24-inch main.

The second task was to restore service to the 165 customers whose meters had been shut eff. The dispatch with which this job was done is best revealed by hte statement that service was restored within 24 hours to all except five customers. In these five cases, the premises were locked, and the customers appeared to be out of town.

Much of the credit for noteworthy performance of Brooklyn Union in this emergency situation is due to the many employees who, on learning that a gas main had broken, hurried to the scene and volunteered their services, offering to do whatever work was needed.

The volunteers all pitched in and performed the tasks to which they were assigned with courage and energy.

—Brooklyn Union Gas News

House Heating Regulations in Los Angeles

Residential building in sections of Los Angeles remote from the natural gas lines of utility companies is increasing so rapidly that a growing demand for modern heating equipment designed to burn butane or some other form of liquefied gas has developed to an extent that it has created a new problem for the building and safety department.

Due to the difference in the characteristics between natural gas and liquefied petroleum, G. E. Morris, superintendent of building and safety, pointed out, safe and efficient performance of a heating appliance depends to a large extent on proper burner fire box construction and arrangement of the gas control equipment for the particular gas supplied to the appliance.

To insure safe construction of such heating equipment, the Board of Building and Safety Commissioners on August 4 adopted a resolution advising all heating appliance manufacturers and contractors installing such equipment in Los Angeles that on and after September 15, 1941, all gas burning warm air furnaces, floor furnaces and wall heaters installed in the city and constructed to burn any liquefied petroleum gas shall be of a type and construction approved by the Board for use with such gas.

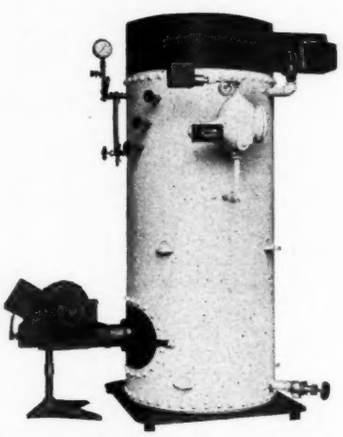
The ruling provides that all such appliances must be laboratory tested and approved for use with liquefied petroleum gas and equipped with approved controls which will assure complete shut-off of all gas supply to both main burners and pilot burners in the event of a pilot failure.

A.G.A. Combined Industrial Gas Exhibit

At the National Metal Congress and Exposition, to be held in Philadelphia, October 20-24, the Industrial Gas Section of the A.G.A. will use over 5000 square feet of space where will be shown exhibits of seventeen leading manufacturers of gas using equipment for the metal industries.

A group of gas companies, serving in and near Philadelphia, have contributed to make available effective, unified decoration for the entire area. They will also supply competent men to man the display. There will also be an attendance of representatives of manufacturers and of the American Gas Association.

LATTNER
GAS — OIL BOILER
3 HP to 35 HP.



Burns natural gas or regular furnace oils with equal efficiency.

P. M. Lattner Mfg. Company
Cedar Rapids, Iowa

CURRAN-KNOWLES GAS AND COKE OVENS

Strong reactive metallurgical coke is being produced in this Curran-Knowles plant from low volatile expanding coal **without blending.**

REACTIVE COKE

Is better for domestic and many metallurgical uses.

Coal Carbonizing Company
Bank of Commerce Building **St. Louis, Mo.**

New Appointments to Requirements Committees Announced By A.G.A. Testing Laboratories

To provide wide and new representation of all interests in the gas industry in development and revision of requirements for gas appliances and their accessories, membership on committees charged with this responsibility is constantly rotated. In keeping with this policy and to fill vacancies which had occurred, a number of new appointments were recently announced by Mr. C. H. Waring, Chairman, A.S.A. Sectional Committee, Project Z21, A.G.A. Approval Requirements Committee. Some of the more important of these are presented below.

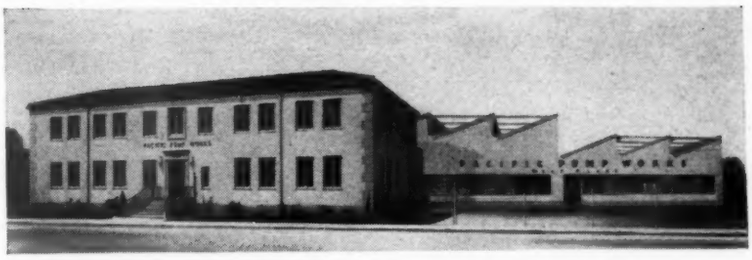
Mr. C. A. Olsen, President of The C. A. Olsen Manufacturing Company and President of the National Warm Air Heating and Air Conditioning Association, was appointed to represent that group on the Approval Requirements Committee. This adds another general interest group representative to this main committee, bringing its total number of general interest members to 9. Prof. S. Konzo, Warm Air Heating Research Residence, University of Illinois, was also selected to represent the National Warm Air Heating and Air Conditioning Association on the Subcommittee on Approval Requirements for Central Heating Gas Appliances.

Mr. A. R. Bailey, Assistant to the President, Coast Counties Gas and Electric Company, was appointed Chairman of the Subcommittee on Approval Requirements for Central Heating Gas Appliances. Succeeding Mr. Waring as Chairman of the Subcommittee on Approval Requirements for Gas Water Heaters, Mr. H. W. Geyer, Utilization Engineer, Southern Counties Gas Company, was appointed. In addition, Mr. E. H. Eacker, Assistant to the President, Boston Consolidated Gas Company, was designated to fill the vacancy created by these changes.

Mr. S. A. Kuntz, Engineer, Philadelphia Electric Company, was appointed Chairman of the Subcommittee on Listing Requirements for Gas Conversion Burners. Another appointee to this committee at this time is Mr. C. F. Henness, General Supervisor Gas Sales, Public Service Company of Northern Illinois. To head the newly formed Subcommittee on Approval Requirements for Gas-Fired Duct Furnaces, Mr. A. B. Banowsky, Commercial Sales Division, United Gas Corporation, was appointed. This committee is now engaged in preparation of initial standards covering such equipment the field for which is constantly expanding.

Wray Becomes Supt. of Distribution at Memphis

W. A. Dunkley, Director of the Gas Division of the Memphis Light, Gas & Water Division, announces the recent appointment of Mr. T. Cecil Wray to the position of Superintendent of Gas Distribution, succeeding Mr. W. S. Myrick who died July 27th. Mr. Wray is a graduate of the Carnegie Institute of Technology. He came with the Memphis gas utility in 1928 and for the past several years has been Gas Distribution Engineer.



Pacific Coast Plant and Office of Clark Bros. Co.

Chaplin-Fulton Represented by Blanchard Smith

The Chaplin - Fulton Manufacturing Company of Pittsburgh, Pa., announces that Chaplin-Fulton Regulators will be represented in the Mid-Continent territory by Blanchard Smith, who formerly represented the Reynolds Gas Regulator Company. Mr. Smith was also for years

Blanchard Smith

connected with Westcott & Greis, Inc., of Tulsa, Oklahoma, and is well known to users of gas equipment. His territory, including Iowa and Nebraska on the north and Louisiana and Texas on the south, will comprise eight states, with headquarters in Kansas City, Missouri.

Rosenkrans Chairman Refrigeration Committee

F. M. Rosenkrans, new business manager of The Gas Service Company, has accepted appointment as chairman of the refrigeration committee of the A.G.A. residential section for the ensuing year.

Clark Opens New West Coast Office

Mr. J. B. O'Connor, Vice-President of Clark Bros. Co., Inc., Olean, New York, announces the opening of a new West Coast office, which will be in charge of Mr. A. K. Hegeman.

Clark Bros. Co., for the past ten years, has been represented on the West Coast by the Smith-Booth-Usher Company of Los Angeles.

The new sales office and warehouse will be located at the plant of the Pacific Pump Works, Bicket Street and Slauson Avenue, Huntington Park, California.

Mr. Art Rowe will be in charge of the service department and a complete stock of repairs will be carried.

CP Gas Range Manufacturers Introduce Unique Story Book Fall Campaign

A new and unusual theme for the promotion of CP (Certified Performance) Gas Ranges will be introduced in the Fall sales promotion campaign, now in the mails to thousands of gas utility executives and dealer merchandisers throughout the United States and Canada, it was announced by the CP Sales Management Committee of the Association of Gas Appliance and Equipment Manufacturers.

Using the interesting story book technique, while at the same time presenting in forceful and captivating style the CP merchandising story, both from the utility and dealer sales viewpoint, the campaign is considered one of the most novel and extraordinary direct mail promotions of its kind ever produced.

As a dramatic climax, the campaign portfolio contains an actual recording with a stirring and timely message to the gas industry from Lowell Thomas, the famous news analyst and commentator.

Measuring 8½ x 11 inches, the book is produced in four colors on heavy stock and is bound with plastic rings.

PREPARE

for winter peaks ahead!

600,000 bushels of G P M prepared iron oxide sponge at your service by water, rail or truck.

GPM IRON HYDROXIDE

GAS PURIFYING MATERIALS COMPANY

Long Island City, N. Y.

A.G.A. Announces Tentative Plans for Annual Meeting at Atlantic City Oct. 20-22

In accordance with the policy determined upon in a period of national emergency by the Executive Board, the Annual Meeting of the American Gas Association in Atlantic City, October 20-22, will be reduced in length and number of meetings, and the subjects discussed will be confined to the most important problems of the industry.

These subjects in the General Sessions are as follows:

The National Defense and the American Gas Association.

Promotional Policies in the National Emergency.

Emergency and Post-Emergency Research Programs.

Nutrition and the National Defense.

Plant Protection in the Emergency.

In addition, special addresses have been arranged for the general subscription dinner the evening of Tuesday, October 21, and the general subscription luncheon on Wednesday, October 22, which will end the Annual Meeting. One address will be inspirational; the other will deal with the Present and Future of the Gas Industry.

The Technical, Residential, Accounting and Industrial and Commercial Gas Sections will hold their meetings on Monday morning and Tuesday afternoon, while the Natural Gas Section meeting will be on Monday afternoon. The Home Service Breakfast will be held on Tuesday morning.

The annual presentation of awards by President Strickler will probably take place at the Tuesday evening dinner. These include the Charles A. Munroe Award, the American Gas Association Meritorious Service Medal, the Beal Medal and the McCall Award.

As usual there will be a number of committee meetings on these three days.

A notable contribution at the Natural Gas Section meeting on Monday afternoon will be an address on "England—Its Civilian Protection and Gas Utility Operations in Wartime," by Davis M. DeBard, vice-president, Stone & Webster Service Corp., New York. Mr. DeBard has obtained a great deal of valuable information depicting the operating and civil protection problems of gas companies in England and his talk should be extremely interesting and valuable.

The problems of the gas utilities in this country in connection with the national defense program will be thoroughly explored at the same natural gas session by a group of executives representing the Pacific Coast, Southwest, Middlewest, Appalachian and Great Lakes areas. This panel discussion will cover operating problems, service of war industries, army camps, priorities, civilian protection problems and other related phases of the defense program.

An important study of "Alternative and Auxiliary Gases from Liquefied Products" will be presented by C. George Segeler, American Gas Association utilization engineer. Mr. Segeler's paper will cover: first, a comprehensive survey of the present status of the use of liquefied petroleum gas products by the gas utility industry; second, the evaluation of the possible carrier gases to see which combination would yield a substitute gas closest in its properties to the characteristics of natural gas.

The Industrial and Commercial Gas Section under the leadership of Chairman H. Carl Wolf, president, Atlanta Gas Light Company, and J. P. Leinroth, Public Service Electric & Gas Co., Newark, who heads the Program Committee, has prepared a program of compelling interest and timeliness. Virtually one entire session will be turned over to talks on the use of gas in national defense, while the remaining session will be set aside for a thorough review of the profitable commercial gas load.

With developments in the last decade making gas-burning equipment an indispensable tool in most defense industries, the use of gas has forged ahead rapidly since the inauguration of the emergency program. A group of well-posted executives, representing different sections of the country, will discuss the effect of this big national defense load on their own companies and neighboring territories, thus offering an authoritative, up-to-the-minute review of what gas is doing in national defense factories.

Among those who have already accepted invitations to participate in the symposium, "Industrial Gas at Work in the Present Emergency," are: Herman Russell, president, Rochester Gas and Electric Corporation; Edward J. Tucker, general manager, Consumers Gas Co. of Toronto; Walter C. Beckjord, vice-president and general manager, Columbia Gas and Electric Corp., New York; J. V. Strange, vice-president, United Gas Public Service Co., Houston; Frank H. Adams, president, Surface Combustion Corp., Toledo; and F. M. Banks, vice-president, Southern California Gas Co., Los Angeles. Chairman Wolf, as presiding officer, will coordinate and summarize these talks.

At the session devoted to commercial gas business, two leading manufacturers of heating equipment will give talks on "Increasing Your Heating Business in Commercial Establishments," while O. F. Keune, sales manager, Florida Power and Light Co., Miami, will speak on "Opportunities I See for Selling Commercial Gas." Climax of the meeting will be a dramatic demonstration of modern and attractive commercial gas appliances by Carl Sorby, promotion director, George D. Roper Corporation. Mr. Sorby's theme will be "The New Counter Gas Appliances—Your Tools for Future Business—See 'Em! Know 'Em! Sell 'Em!"

All delegates to the Annual Meeting are invited to visit the large exhibit of industrial gas equipment for the defense industries which will be held by the Industrial and Commercial Gas Section at the National Metal Exposition in nearby Philadelphia, October 20-24.

Tentative plans for the Residential Section program feature a forum of sales managers and other executives for the purpose of considering merchandising and sales activities in the light of the present unusual conditions. The possibility that only a restricted number of domestic appliances will be available next year, curtailed credit regulations, and other emergency-born problems, have created many timely subjects for discussion.

R. J. Rutherford, vice-president, Worcester Gas Light Co., Worcester, Mass., chairman of the Residential Section, will present the highlights of the year's residential sales activities in his annual address.

A second session of the Residential Section will include brief talks of incoming committee chairmen outlining their programs for the coming year. Prize winning salesmen in the CP Ranger Club and winners of the national Refrigeration Campaign will also be presented. An added attraction will be an address on sales promotion by an executive outside of the gas industry.

The Accounting Section is planning to hold committee discussions designed along the familiar lines of previous years with special emphasis on the luncheon conference idea. Each committee chairman is working diligently on topics for discussion and the program is being developed to encompass the greatest possible amount of current information in the short time available. There will be a business meeting for the purpose of electing officers and receiving committee representatives but no general accounting session such as that held last year.

Two complete sessions have been arranged by the Technical Section for the engineers, chemists, and other operating men. The vital importance of maintaining gas supplies during the emergency and many other problems incident to the de-

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

The Reliable Shut-Off for Street Mains

Safety Gas Main Stopper Co.
523 Atlantic Avenue. Brooklyn. New York

INDEX TO ADVERTISERS

American Meter Co. 8
Autogas Corporation 39

Barber Gas Burner Co., The 2
Besse, Osborn & Odell ..... —
Blaw-Knox Company ..... —

Carbide & Carbon Chemicals Corp. 16
Cast Iron Pipe Research Assn., The ..... —
Chaplin-Fulton Mfg. Co., The 34
Clark Bros. Co. ..... —
Cleveland Gas Meter Co. ..... —
Cleveland Trencher Co. 5
Coal Carbonizing Co. 42
Connelly Iron Sponge & Governor Co. ..... —
Cribben & Sexton Co. 6
Cruse-Kemper Co. 34

Dresser Mfg. Co. 22

Gas Machinery Co. ..... —
Gas Purifying Materials Co. 43
General Coal Co. ..... —
Golden Brown Appliance Mfg. Co. 41

Harper-Wyman Co. 19-20
Henry Furnace & Foundry Co. ..... —

Lambert Meter Co., Inc. 34
Lattner Mfg. Co., P. M. 42
Lavino & Co., E. J. 22

Merco-Norstrom Valve Co. 29-30
Metric Metal Works 8
Monmouth Products Co. 33

Phillips, Alfred I. ..... —
Pittsburgh Coal Co. ..... —
Pittsburgh Equitable Meter Co. ..... Front Cover
Pollard Co., Joseph C. 17

Reed Manufacturing Co. 45
Remington Rand Co. ..... —
Republic Heaters Sales Co. 39
Reynolds Gas Regulator Co. 33
Roberts-Gordon Appliance Corp. ..... —
Robertshaw Thermostat Co. ..... —
Roper Corp., Geo. D. ..... —
Ruud Manufacturing Co. ..... —

Safety Gas Main Stopper Co. 44
Semet-Solvay Engineering Corp. 3
Servel Electrolux Division ..... —
Skinner Co., M. B. ..... —
Sprague Meter Co., The ..... Fourth Cover
Stacey Bros. Gas Construction Co. 41
Superior Meter Company 38

Union Carbide & Carbon Corp. 16
United Engineers & Constructors, Inc. 34

West Gas Improvement Co. 34
Worthington Pump and Machinery Corp. ..... —

fense program have given unusual weight and purpose to the committees' work which will be reflected in the annual reports. Technical problems raised by the defense program will be dealt with in a separate paper.

The second technical session will be devoted to papers on four subjects of current interest, namely: The Dilution of Coke Oven Gas with Blue Gas, Service Trends and Problems, Motor Vehicle Operation, and Pyridine Recovery. Outstanding gas utility authorities will present the latest information on each of these topics. Despite the limited number of meetings, there will be ample time for discussion of individual operating problems.

A. K. Hegeman Represents Clark on West Coast

Clark Bros. Co., Inc., of Olean, N. Y., manufacturers of gas and Diesel engines and engine-driven compressors, have announced a change in address of their Pacific Coast office and warehouse and the appointment of A. K. Hegeman as West Coast manager.

Mr. Hegeman is a graduate of the University of California college of mining engineering. He entered the employ of the Smith-Booth-Usher Company, of Los Angeles in 1924, where he has since been engaged in oil field sales work. The Smith-Booth-Usher Company has been Clark's Pacific Coast representative for the past ten years, and Mr. Hegeman has had wide experience in selling, installing and servicing Clark engine and compressor installations.

REED'S 4 WHEEL
Razor Blade Pipe Cutters

IDEAL FOR ANY TRENCH OR OTHER CLOSE QUARTER JOBS

$5.11 F. O. B. ERIE

Capacity
½" to 2"
Weight 5 lbs.

The REED FOUR WHEEL Cutter operates with a short back and forth motion through only one-third of a circle. Each of the four wheels exerts the same pressure on the pipe, and all 4 therefore cut evenly and completely through the pipe at the same time.

Equipped with Reed special alloy RAZOR BLADE Wheels, which cut with remarkable ease, leave little burr, and have a long life of useful service.

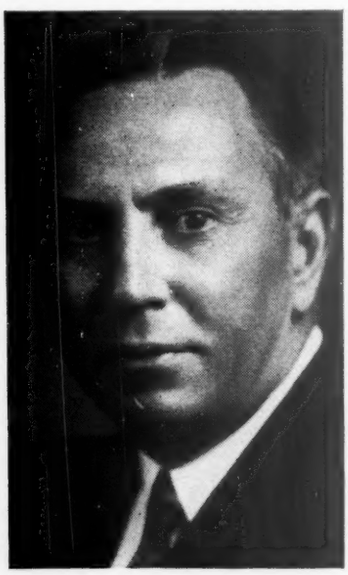
A sample cutter for test and trial may be ordered on memorandum invoice, to be paid for if retained or returned for credit if unsatisfactory. Try it once, and you will use no other.

REED MFG. COMPANY
1436 W. 8th Street • ERIE, PA.

Obituary

FLOYD W. PARSONS

Floyd W. Parsons, vice-president of the Robbins Publishing Co. and editorial director of *Gas Age*, died Thursday night, August 7, at the Post-Graduate Hospital, New York City. He was 61 years old, and had been ill for a fortnight, undergoing an intestinal operation from which he appeared to be recovering.



Floyd W. Parsons.

Born at Keyser, W. Va., January 23, 1880, he received his degree in mining engineering from Lehigh University in 1902.

Mr. Parsons' long career in fuel engineering started immediately after college when he became chief engineer for the Stonewall (W.Va.) Coal and Coke Co. He became successively district engineer for the Lehigh Valley Coal Co., Wilkes-Barre, Pa.; resident engineer for the Consolidation Coal Co., Frostburg, Md.; and chief engineer for the New River Consolidated Coal and Coke Co., Rush Run, W. Va.

In 1905-06, he was assistant professor of mining at the Michigan College of Mines, and then became chief engineer of the Victor American Fuel Co. and the C. & S. E. Ry. Co. at Denver, Colo.

During these years he had written numerous articles on fuel economics and mining engineering, and his aptitude for editorial work dated back to college days. In 1906 he became associate editor of *Engineering and Mining Journal* in New York City.

Visualizing the opportunity for a magazine devoted entirely to coal, Mr. Parsons in 1911, with John A. Hill, of New York City, founded and became the editor of *Coal Age*. He continued in this work for eight years, becoming assistant to Harry A. Garfield, U. S. Fuel Administrator, during the World War.

Mr. Parsons was a firm believer in the future of gas. He had a wide acquaintance throughout the industry and attended many of its meetings. He will be missed by a host of friends.

Mr. Parsons was a member of the American Gas Association, American Institute of Mining and Metallurgical Engineers, Mining and Metallurgy Society of America, Academy of Political Science, Rocky Mountain Coal Mining Association, the Dutch Treat Club, and the Authors League of America.

HARRY DICKERSON

Harry L. Dickerson, an executive associated for the last twelve years in the management of natural gas properties of the United Gas Corporation, an Electric Bond and Share Company affiliate, died August 17th after a long illness. He was 56 years old.

Before joining the United Gas system Mr. Dickerson had been associated with H. L. Doherty & Co. in making investigations and appraisals of utility properties. Afterward he held executive positions in a number of United Gas subsidiaries.

At one time he was vice-president of the United Gas Engineering Company and later a vice-president of the United Gas Public Service Company.

During the World War Mr. Dickerson served first as assistant general auditor of the Emergency Fleet Corporation and then as controller of the Standard Shipbuilding Corporation, which turned out cargo ships at its Hog Island yards at mass-production rates. After the war he served as controller and assistant general manager of the United States Lines until he entered the utility field in 1924.

Mr. Dickerson was born in Chester, N. J., and was educated there and at Mount Herman Academy.

For the last twelve years he had been active chiefly in the natural gas industry, in which he became well known. Mr. Dickerson made his home in Summit, N. J.

JOHN J. BURNS

John J. Burns, former investment manager of the Laclede Securities Company and retired commercial manager of The Laclede Gas Light Company, with which he was associated for more than forty years, died August 13 at his home after a brief illnes.. He was 66.

Mr. Burns, who entered the utility field as an employee of the old St. Louis Gas Company prior to its merger with Laclede in 1890, was widely known in the gas industry, having been a member of the Advisory Council of the American Gas Association and for two years chairman of the Association's commercial section. He retired in 1933.

C. F. CARTER

C. F. Carter, operations manager for Nashville Gas and Heating Company, died on August 20th after a brief illness. He had been connected with his company since 1919.

Mr. Carter came to Nashville as an engineer with the Nashville Gas and Heating Company and held that position until 10 years ago when he became operations manager.

W. S. MYRICK

W. S. Myrick, Superintendent of Gas Distribution of the Memphis Light, Gas & Water Division, died July 27th, at his residence in Memphis, Tennessee. He was 78 years of age at the time of his death. Mr. Myrick came to Memphis from the Peoples Gas Light & Coke Company of Chicago in 1903 and had worked for the Memphis gas utility under various managements ever since. He had been in failing health for several months. He is survived by his widow, Mrs. Catherine Van Court Pritchartt Myrick, a stepson, A. V. Pritchartt, and a stepdaughter, Mrs. Carl Robinson, all of Memphis, Tennessee.

FREDERICK W. ROBERTSHAW

Frederick W. Robertshaw, founder of the Robertshaw Thermostat Company, retired inventor and industrialist, died on August 24 at his home in the Ruskin Apartments in Pittsburgh, Pa., at the age of 88.

Mr. Robertshaw, who was of English parentage, founded the Robertshaw Thermostat Company in Pittsburgh, Pa. He was born in Covington, Ky., on July 10, 1853, while his parents were visiting there from England. He returned to this country permanently at the age of 18.

After a period of work for brass-making firms in Pittsburgh, during which he gained mechanical and technical knowledge, he invented a highly efficient thermostat which was originally applied to water heaters.

An interesting anecdote in connection with this was that having a large family, Mrs. Robertshaw objected to trips to the basement to light and extinguish the old manually-operated water heater, and to relieve her of this hardship, Mr. Robertshaw invented the water heater thermostat. The news of this invention spread throughout the neighborhod and soon many requests for duplicates were received. That accomplishment was in 1899 and in 1907 he started its manufacture by his own company in Pittsburgh.

In 1914 the plant was moved to Youngwood, Pa. The progress of this company can be best understood by the increase in personnel to 2,300 from 28 persons originally employed. From this modest beginning the company has expanded so that now in addition to its Youngwood plant it controls and operates the Grayson Heat Control, Ltd., in Lynwood, Calif., and the American Thermometer Company, in St. Louis, Mo. Mr. Robertshaw retired from the presidency in 1928.

In 1878 Mr. Robertshaw married Ida Helen Oldshue, whose father Dr. Lincoln Oldshue, prominent Pittsburgh physician of that time, was a cousin of President Lincoln.

Mr. Robertshaw was a member of the building committee of St. Paul's Cathedral, and a charter member of Duquesne Council, Knights of Columbus.

HUGHES PRINTING CO.
EAST STROUDSBURG, PA.

Now $1.50

for this complete and authoritative treatise—

Pipe Corrosion and Coatings

by

Erick Larson

Past Chairman of American Gas Association Distribution Committee; Author of articles on High Pressure Distribution and Regulator Structures.

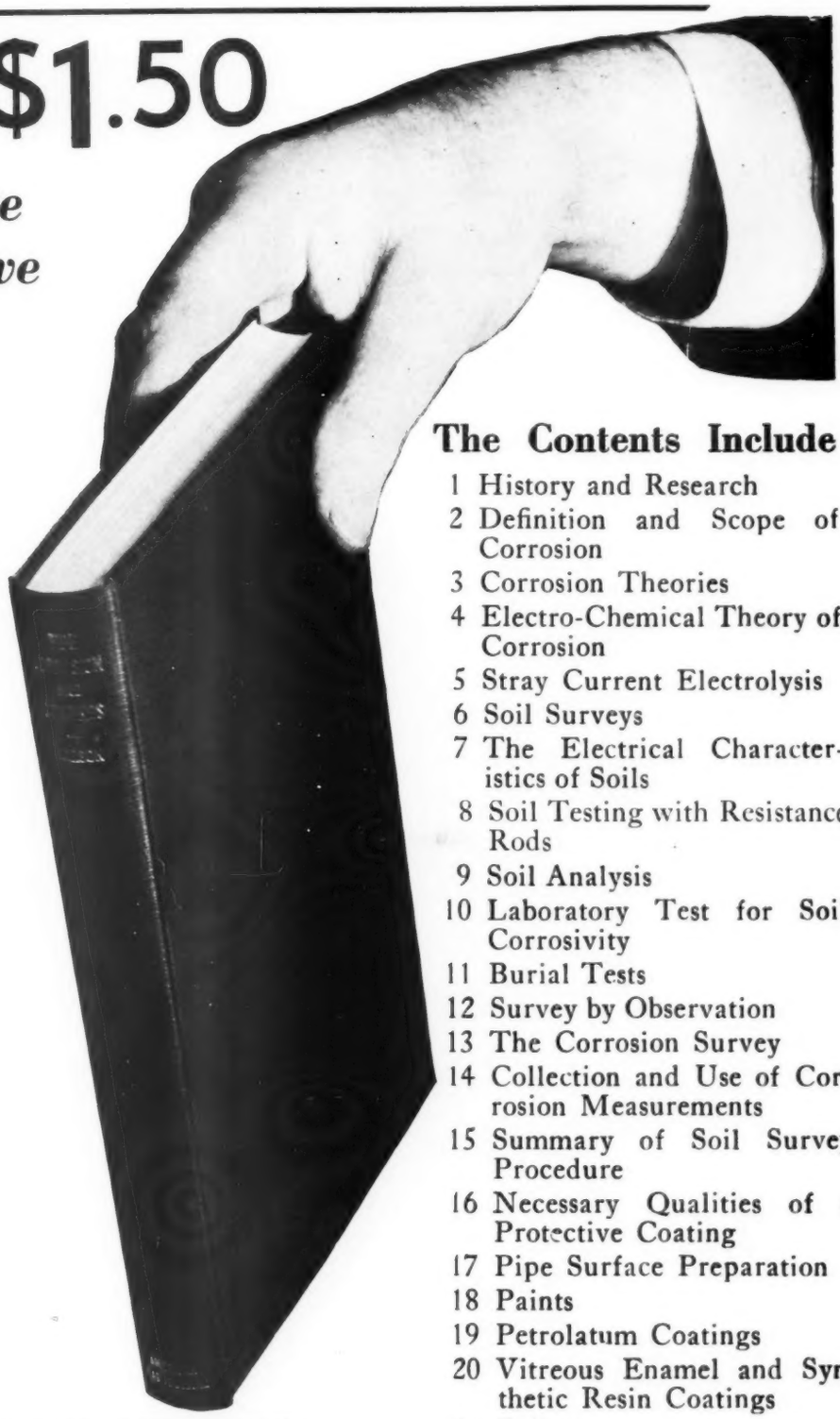
Fully illustrated with many diagrams, charts and photos.

Written in plain understandable language for practical men.

468 Pages—161 Illustrations, Completely Indexed, Cloth Bound.

While the supply lasts we offer **Single Copies at $1.50.**

2 or more copies to same address, **$1.25 each,** postpaid. (Original price **$2.50 each**)



The Contents Include

1 History and Research
2 Definition and Scope of Corrosion
3 Corrosion Theories
4 Electro-Chemical Theory of Corrosion
5 Stray Current Electrolysis
6 Soil Surveys
7 The Electrical Characteristics of Soils
8 Soil Testing with Resistance Rods
9 Soil Analysis
10 Laboratory Test for Soil Corrosivity
11 Burial Tests
12 Survey by Observation
13 The Corrosion Survey
14 Collection and Use of Corrosion Measurements
15 Summary of Soil Survey Procedure
16 Necessary Qualities of a Protective Coating
17 Pipe Surface Preparation
18 Paints
19 Petrolatum Coatings
20 Vitreous Enamel and Synthetic Resin Coatings
21 Primers
22 Asphalt Coatings
23 Tar Base Enamel Coatings
24 Practical Considerations in Application of Primers, Coatings &c.
25 Pipe Coating Fillers
26 Pipe Coating Shields
27 Cement Coatings
28 Cathodic Protection.

American Gas Journal, 53 Park Place, New York
Book Department

Please send ..... Copy ..... of "Pipe Corrosion and Coatings" by Erick Larson

1 Copy $1.50
2 or More $1.25

Name .....

Address .....

City .....State .....

☐ Send Bill ☐ Remittance Herewith

SPRAGUE

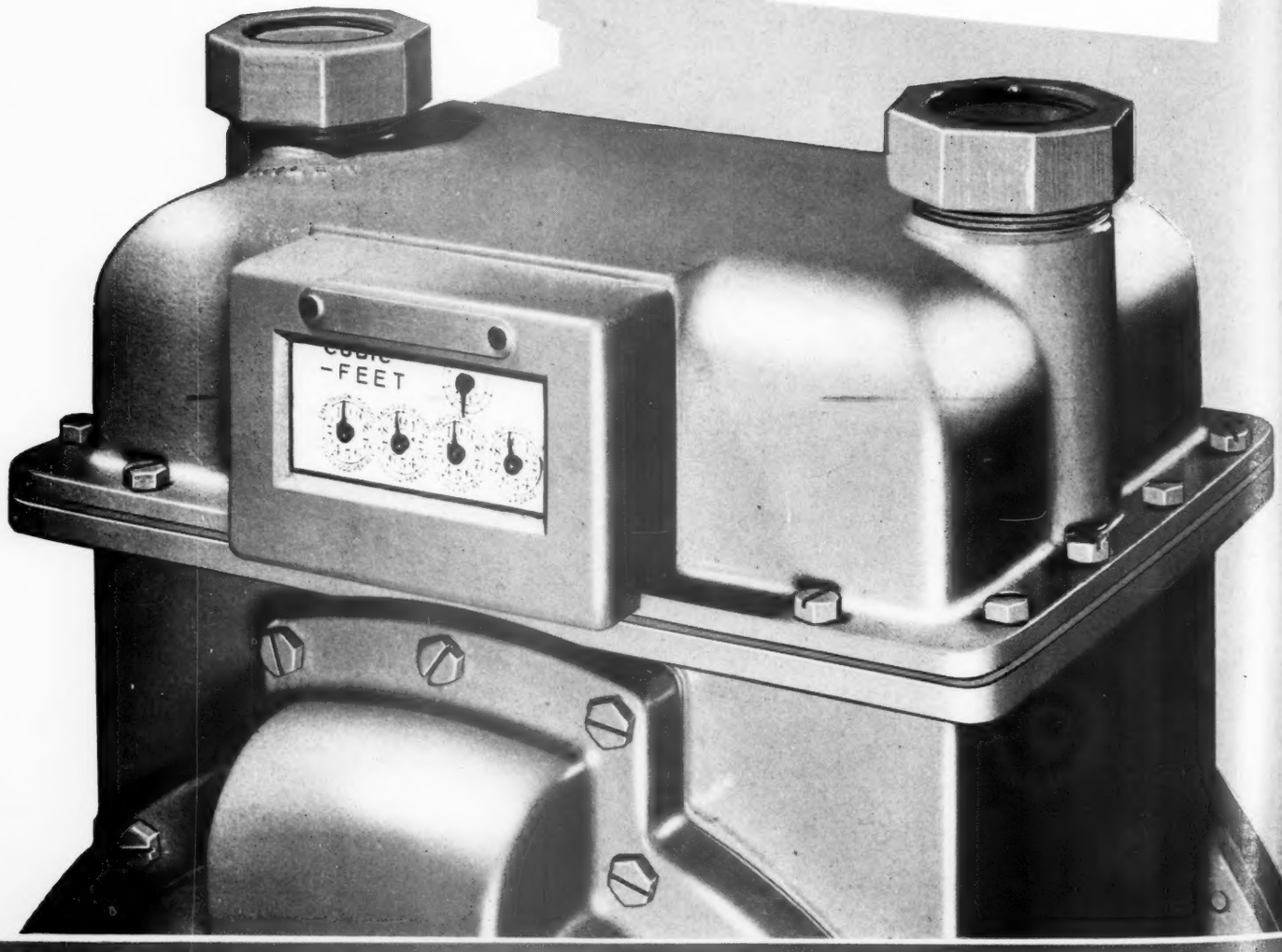
● Forward and on to better equipment — now more than ever, discriminating engineers are recognizing the real value of Sprague's Policy of simplified mechanism and precision construction which insures unequalled accuracy in measurement.

MARCHES FORWARD

SPRAGUE METER No. 4

designed for small industrial installation offers greater capacity in a more compact unit. Rugged in construction, made of cast iron, makes for rigid strength, and simplified mechanism permits a small meter with greatest efficiency. Capacity 600 cu. ft. at ½" W.C.

For complete information write today for catalogue No. 22



THE SPRAGUE METER CO. BRIDGEPORT, CONN.

DAVENPORT, IOWA • LOS ANGELES, CALIF. • HOUSTON, TEXAS • SAN FRANCISCO, CALIF.